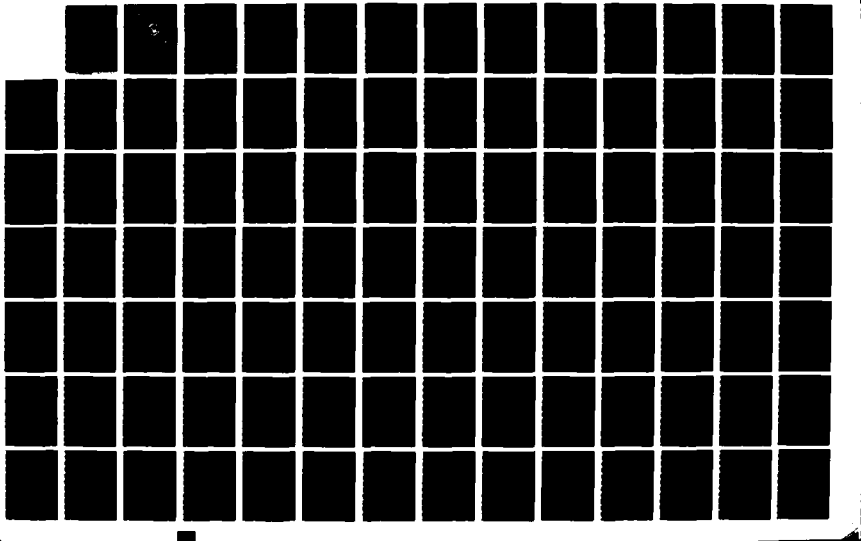
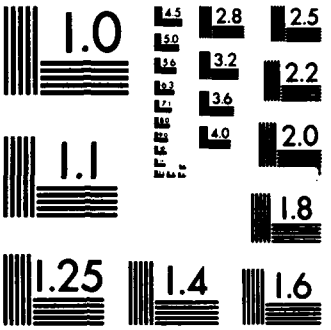
AD-A184 664 INVESTIGATION OF INITIATIVES TO IMPROVE PROCUREMENT SUPPORT AT US NAVAL SHIPYARDS(U) NAVAL POSTGRADUATE SCHOOL MONTEREY CA C D MCDONALD JUN 87 1/2

UNCLASSIFIED F/G 15/5 NL





NAVAL POSTGRADUATE SCHOOL

Monterey, California

A

INVESTIGATION OF INITIATIVES TO IMPROVE PROCUREMENT SUPPORT AT U. S. NAVAL SHIPYARDS

by

Charles D. McDonald

June 1987

Thesis Advisors: Raymond W. Smith
Joseph G. San Miguel

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

AD-A184-664

REPORT DOCUMENTATION PAGE

1a REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b RESTRICTIVE MARKINGS
2a SECURITY CLASSIFICATION AUTHORITY	3 DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited
2b DECLASSIFICATION/DOWNGRADING SCHEDULE	
4 PERFORMING ORGANIZATION REPORT NUMBER(S)	5 MONITORING ORGANIZATION REPORT NUMBER(S)
6a NAME OF PERFORMING ORGANIZATION Naval Postgraduate School 6b OFFICE SYMBOL (If applicable) 54	7a NAME OF MONITORING ORGANIZATION Naval Postgraduate School
6c ADDRESS (City, State, and ZIP Code) Monterey, California 93943-5000	7b ADDRESS (City, State, and ZIP Code) Monterey, California 93943-5000
8a NAME OF FUNDING/SPONSORING ORGANIZATION 8b OFFICE SYMBOL (If applicable)	9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c ADDRESS (City, State, and ZIP Code)	10 SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO / PROJECT NO / TASK NO / WORK UNIT ACCESSION NO

11 TITLE (Include Security Classification)
INVESTIGATION OF INITIATIVES TO IMPROVE PROCUREMENT SUPPORT AT U.S. NAVAL SHIPYARDS

12 PERSONAL AUTHOR(S)
MCDONALD, CHARLES D.

13a TYPE OF REPORT	13b TIME COVERED	14 DATE OF REPORT (Year Month Day)	15 PAGE COUNT
Master's Thesis	FROM _____ TO _____	1987, JUNE	97

16 SUPPLEMENTARY NOTATION

17 COSATI CODES			18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	Shipyard Procurement, Centers of Excellence, Coopers & Lybrand, APADE, Procurement Automation, Productivity Improvement

19 ABSTRACT (Continue on reverse if necessary and identify by block number)

This thesis examines current recommendations and initiatives to streamline the Navy Field Contracting System and improve procurement support for naval shipyards. Specific recommendations from the Coopers & Lybrand shipyard study and Department of Defense and Navy initiatives which will have a positive and significant impact on shipyard procurement support are examined. Additionally, current shipyard requisition processing procedures are reviewed, which highlight the complexity of the system and factors involved in the requisitioning, ordering and receipt of material. Finally, this report explores personnel quality enhancement tools and automated procurement systems designed to improve the acquisition process.

20 DISTRIBUTION/AVAILABILITY OF ABSTRACT	21 ABSTRACT SECURITY CLASSIFICATION
☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	Unclassified
22a NAME OF RESPONSIBLE INDIVIDUAL RAYMOND SMITH, JOSEPH G. SAN MIGUEL	22b TELEPHONE (Include Area Code) 408-646-2052/2187
	22c OFFICE SYMBOL CODES 54Sx, 54Sm

DD FORM 1473, 84 MAR — 83 APR edition may be used until exhausted. All other editions are obsolete.

SECURITY CLASSIFICATION OF THIS PAGE
UNCLASSIFIED

Approved for public release; distribution is unlimited.

Investigation of Initiatives to Improve Procurement Support at U.S. Naval Shipyards

by

Charles D. McDonald
Lieutenant Commander, United States Navy
B.A., University of Washington, 1977

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
June 1987

Author: _____
Charles D. McDonald

Approved by: _____
R. W. Smith, Co-Advisor

_____
J. G. San Miguel, Co-Advisor

_____
W. R. Greer, Jr., Chairman,
Department of Administrative Science

_____
Kneale T. Marshall,
Dean of Information and Policy Sciences

ABSTRACT

This thesis examines current recommendations and initiatives to streamline the Navy Field Contracting System and improve procurement support for naval shipyards. Specific recommendations from the Coopers & Lybrand shipyard study and Department of Defense and Navy initiatives which will have a positive and significant impact on shipyard procurement support are examined. Additionally, current shipyard requisition processing procedures are reviewed, which highlight the complexity of the system and factors involved in the requisitioning, ordering and receipt of material. Finally, this report explores personnel quality enhancement tools and automated procurement systems designed to improve the acquisition process.

TABLE OF CONTENTS

LIST OF FIGURES

I. INTRODUCTION

A. BACKGROUND

The primary mission of the U.S. Navy's eight naval shipyards is to perform authorized ship work in connection with the conversion, overhaul, repair, alteration, refueling, activation and inactivation of various types of naval ships, including nuclear submarines, nuclear surface ships and missile ships, and to perform outfitting of naval ships and service craft. The Supply Department supports the shipyard's mission by acquiring and staging the material required to effect overhauls and repairs. The purchase organization (whether a shipyard purchase division or a separate major field contracting activity) is responsible for acquiring all material that must be purchased with local purchase authority rather than obtained from the General Services Administration (GSA), Department of Defense (DoD), or other Navy sources. While the local procurement of nonstandard material, supplies and services represents a relatively small portion of the shipyards total material requirements, it is, nevertheless, a key ingredient in the overall performance of the shipyard's mission.

The organization structures of the eight naval shipyards are all similar except that some have one or more additional departments, e.g., the Nuclear Engineering Department at the nuclear shipyards. Five of the shipyards have some type of procurement authority while the others receive procurement support from a nearby major Naval Supply Systems Command field contracting activity--Naval Supply Center (NSC) or Naval Regional Contracting Center (NRCC). Since Portsmouth Naval Shipyard is not located near a major field contracting activity, it has been granted unlimited procurement authority for all requirements. Furthermore, similar to an NSC or NRCC, Portsmouth procures material and services for the various activities located at Portsmouth. The Shipyard requirements account for only about 40% of the purchase requests processed annually by the Purchase Division [Ref. 1]. Norfolk Naval Shipyard has $500,000 procurement authority while Mare Island, Philadelphia, and Pearl Harbor Naval Shipyards all have $100,000 authority. Both Mare Island and Pearl Harbor Naval Shipyards also have unlimited authority for nuclear purchase requirements. But in the case of Mare Island, NRCC Long Beach Detachment is co-located with the shipyard's Purchase Division and satisfies Mare Island's non-nuclear

requirements for procurements in excess of $100,000. So, effectively, Mare Island is able to satisfy all of its nonstandard material requirements locally much like Portsmouth Naval Shipyard.

Difficulties with the procurement support of U.S. Navy shipyards are not new. Whenever parts and materials are needed to repair or overhaul a naval vessel but are not carried in the Navy Supply system or readily available, the engineers turn to the Purchase Division for support. The Contracting Officer in turn places an order with a private contractor for the required supplies. Unfortunately this process can take anywhere from several hours, to several days or weeks, or even months depending on such factors as dollar value of the requirement, complexity, availability and purchase office workload.

Usually these requirements are immediate and all too often there is not sufficient lead time to follow the routine requisitioning and ordering requirements of the acquisition process. In the recent past this generally was relatively simple to manage--usually by following a more streamlined requisitioning and contracting approach which was perfectly acceptable under one of the many "exceptions" provided by the Armed Services Procurement Regulation (ASPR) or Defense Acquisition Regulation (DAR).

But today the contracting climate has changed significantly thereby removing much of the flexibility and "imaginative" contracting alternatives which were heretofore so readily available and to some extent taken for granted. At about the same time as some of these changes were being made, public and congressional attention was being focused on DoD's spare parts pricing problems.

Although DoD's purchasing practices had long been under close scrutiny by both internal and external auditors, greater attention was focused in this area as a result of several "contractual irregularities" and "horror stories" highly publicized by the media. The examples are all too familiar and although they pale in comparison to the billions of dollars and number of proper contract actions annually awarded by field activities, the result has been to perform an indepth review of the contracting system to determine how these problems occurred and change the system to preclude any recurrences. This has spawned initiatives such as the Navy's Price Fighter and Buy Our Spares Smart (Boss), the Air Force's Zero Overpricing Program (ZOP), and the Army's Spare Parts Review Initiatives (SPRINT) just to name a few, to improve competition and raise cost consciousness among the services' buyers [Ref. 2: p. 27]. Today these programs are institutionalized within their respective services. Moreover,

new and sweeping legislation in the form of more stringent synopsis and competition requirements and in particular the Competition in Contracting Act of 1984 (CICA) were enacted by Congress. The result has been a congressional mandate for more competitive procurements and stricter compliance with contracting regulations. The end result has effectively been to lengthen Procurement Administrative Lead Time (PALT).

In terms of improving competition, these actions have been and continue to be successful as witnessed by an over 100% overall increase in competitive procurements DoD-wide. For fiscal year 1986, for example, the percentage of the Navy's procurement dollars competed was 54.9% versus competitive awards of 26.7% during fiscal year 1982 [Ref. 3]. However, at the shipyard level, the new rules have resulted in longer procurement lead times and forced new attention in the areas of advanced planning and ordering. Although many of the new requirements can be accommodated by increasing the materials ordering staff and changing ordering procedures at the local levels, in many instances this is not feasible due to the fiscal constraints imposed on the shipyards and the very nature of overhaul business, e.g., often times the shipyard may not know what material is required until the end item (major component or equipment) is physically opened and inspected. Further, little has been done by management in the way of advanced planning. As a result, the purchasing organization hasn't been given any more time to procure material and services. These constraints coupled with greater emphasis on reducing overhaul costs and delays have created an urgent need to look at new ways of making the procurement function more efficient and streamlined.

Concerned over shipyard overhaul problems, the Office of the Assistant Secretary of the Navy recently commissioned Coopers & Lybrand, a leading accounting and management consultant firm, to assess the Navy Industrial Fund (NIF) activities [Ref. 4]. In the area of procurement, the study concluded that legislative relief may be needed in some instances in order to streamline the procurement process and improve the overall effectiveness and productivity of the shipyard mission. Also, the study indicates that there are several actions which can be taken at the organizational and Systems Command levels which will also alleviate the impact of the new and stringent regulations. Moreover, other activities have submitted streamlining recommendations in the form of the Model Installation Graduate Program or MIGP. Some have been favorably endorsed and approved while action is currently pending on others.

While there is no panacea for the procurement woes at the shipyards, these recommended procedural and regulation changes from the Coopers & Lybrand study and MIGP, the simplification and streamlining initiatives by the Naval Supply Systems Command (NAVSUP) and DoD, will minimize the impact of the stringent contracting requirements. Better utilization of ADPE resources and employee productivity techniques are additional tools which, if effectively employed, will also contribute to a more streamlined and professional shipyard procurement organization and improved procurement support.

B. OBJECTIVES

The objectives of this thesis are to analyze the procurement support (shipyard procurement system) provided to each of the Navy's eight naval shipyards and to provide possible improvements to this system and recommend appropriate changes where necessary to further improve the shipyard procurement process and support to the overall shipyard mission. The shipyard procurement system is a management system and as such this study includes both theoretical as well as actual information useful in improving the performance of the procurement organization. This study will first describe the shipyard procurement system at Mare Island Naval Shipyard which is similar to other field activity procurement organizations. This will be done in an attempt to define system commonalities or differences which may enhance procurement support. Also, the contract streamlining and simplification efforts initiated by NAVSUP and DoD are reviewed to determine their applicability and the possibility of their effect on improving shipyard procurement support. The current initiatives undertaken by various organizations comprise the main thrust of procurement improvements at naval shipyards today and the study of these efforts will provide the basic knowledge and information requisite to form conclusions and make recommendations for improving procurement support at the Navy's eight naval shipyards.

C. RESEARCH QUESTIONS

To achieve the objective of the research, the following question was posed: What are the principal characteristics of the procurement process at U.S. Naval shipyards and how might they be improved? To answer the basic research question, the following subsidiary questions were asked:

1. What characteristics of the procurement system lengthen the processing time?

2. What are the unique aspects of the naval shipyard environment that force unique demands on the procurement process?
3. What initiatives have been made to improve shipyard procurement support?
4. Are internal or external organizational changes needed?
5. Are regulatory changes needed and/or feasible?
6. Is the work force adequate in terms of numbers, experience, and training?
7. Can improvements in the procurement process be made with additional or improved ADPE?
8. Are personnel support systems adequate?

D. RESEARCH METHODOLOGY

The information presented in this research effort was obtained through personal interviews of key individuals at the Naval Supply Systems Command, Naval Sea Systems Command, Navy Regional Contracting Centers, Naval Supply Centers, Naval Research Center China Lake, and the eight naval shipyards in addition to the author's previous experience as the Purchase Division Officer at Mare Island Naval Shipyard.

The questionnaires in Appendix B to this report were used to solicit specific information from individuals at the procuring activities for the naval shipyards. Comments from these questionnaires have been generalized and are included in applicable areas throughout the thesis.

The literature utilized in this research effort was obtained from multiple sources, including cataloged reference material, the Defense Technical Information Center, business periodicals, the Naval Postgraduate School Library, the U.S. General Accounting Office (GAO), and Defense and Navy Department reports. Finally, information and recommendations from the continuing Coopers & Lybrand study, the Defense Contract Simplification Report, and the President's Commission on Defense Management have been included throughout this report. Those individuals providing significant contributions to this research effort are recognized in Appendix A.

E. SCOPE OF THE STUDY

This study encompasses the current organizational structures and regulations governing the procurement establishment which now provide procurement support to the eight U.S. Naval shipyards and several specific recommendations and other efforts submitted through internal Navy, and DoD reports. This research effort will focus on these studies and reports aimed at streamlining and improving the shipyard procurement process. The shipyard environment is unique vis-a-vis activities which are

not industrial or research oriented, and accordingly, it demands special consideration in terms of organization structure, and application and applicability of contracting rules and regulations. Primary emphasis will be focused on the procurement support function although a host of other external activities and functions are key determinants of the procurement process and directly influence the ultimate success of the procurement function. Some of these variables will be discussed, but detailed analysis of them must be the subject of future studies.

F. ASSUMPTIONS

Throughout this research report, it is assumed that the reader is familiar with the federal acquisition process and has a basic understanding of the Navy Field Contracting System (NFCS) and the interrelationships of the various supply functions and other shipyard activities. The reader should have knowledge of management organizations and ADPE/MIS applications and management theory. Finally, it is assumed that the reader is familiar with the fundamentals of the Navy's supply system, its attendant acronyms and definitions. For the purposes of this report, a description of the requisition processing and procurement procedures and the various applicable Supply Department Divisions at a naval shipyard is provided in Chapter II. For a further explanation of the acquisition process, applicable rules and regulations, the reader may consult the Federal Acquisition Regulations (FAR), Defense Federal Acquisition Regulations Supplement (DFARS), Navy Acquisition Regulation Supplement (NARSUP), and Navy Supply Acquisition Regulation Supplement (SUPARS).

G. LIMITATIONS

Material ordering is a function of several activities, e.g. requisition ordering and preparation, technical screening, shipping, receiving, etc. The cumulative or sum total of the time expended in these other areas is generally longer than the time required for the purchasing activity to place an order (Procurement Administrative Lead Time or PALT). While these functions are critical to the overall support and effectiveness of the procurement mission they are not studied in this paper. The purchase requirements of U.S. Naval shipyards are similar in nature to all other Naval Industrial Facilities (NIF), but they are unique as they relate to the repair and overhaul mission of naval vessels. The majority of the open purchase buys are in support of this overhaul mission or production effort and the various shipyard requirements supporting this mission,

e.g., Public Works, Supply, Planning, Nuclear Engineering Departments. Also, because of the myriad of acquisition regulations imposed on the Navy, acquisition at shipyards is unique in comparison with private industry. Moreover, the very nature of a nonprofit activity creates very peculiar problems which private industry is not faced with. As such a comparison with other DoD activities and private shipyards has not been attempted. Also the study does not discuss the Ship Repair Facilities (SRF) which of course have the same basic mission as the shipyards. However, the findings and recommendations from this study would apply at those activities and the Naval Supply Centers (NSC's) and Naval Supply Depots (NSD's) that support them as well.

H. DEFINITIONS, ABBREVIATIONS, AND ACRONYMS

A comprehensive glossary of abbreviations and acronyms used within this thesis is presented as Appendix B. Working definitions of terms and concepts used in this thesis will be provided within the text of the thesis as deemed necessary.

I. ORGANIZATION OF STUDY

This thesis is organized to provide the reader with an overview of the problems associated with procurement support at naval shipyards and the need and potential for improvement. It discusses the role of the shipyard procurement organization and the major NAVSUP field contracting activities which provide procurement support at the shipyard.

Chapter I provided an introduction to the shipyard and field contracting activities and associated problems. This chapter briefly reviewed the mission of the shipyard, the Supply Department, and the purchasing function. The key issues and problems associated with the field purchasing process at naval shipyards have also been presented. Finally, this chapter presented the objectives, research questions, research methodology, scope, limitations, and the organization of this study.

Chapter II begins by briefly discussing the background of the Federal Acquisition Regulations from the period during World War II up to the present time. A focus of the competition initiatives and legislation are emphasized because of the significant impact they have on the procurement support provided by the NFCS. This chapter provides a review of shipyard requisition processing and describes in some detail the specific procedures at Mare Island Naval Shipyard. The procedures at Mare Island are intended to exemplify these processes at other shipyards although the author acknowledges that each activity's procedures may vary. Next the procurement process

at naval shipyards is presented along with applicable statistics and charts. The basic theme of this chapter is to explain the opposing goals between the very stringent and new competition requirements and the procurement needs of the industrial facility.

Chapter III discusses significant procurement support streamlining initiatives including Coopers & Lybrand recommendations, Model Installation Graduate Program (MIGP) initiatives, and Naval Supply Systems Command (NAVSUP) and DoD initiatives. The chapter differentiates between material lead time and procurement administrative lead time which is important in understanding the requisitioning and procurement procedures and the time involved in these two processes. The point being that the time involved in requisitioning and receiving material is critical to the performance of the shipyard. This discussion then turns to various initiatives and recommendations regarding improvement of shipyard procurement support submitted by various organizations in and out of the federal government. In particular the chapter explains various alternatives available for reducing material ordering and procurement administrative lead times.

Chapter IV explores procurement automation applications and provides an in-depth review of the Navy's Automated Procurement and Accounting Data Entry (APADE) system. This chapter looks at the role of automation in the procurement process, the current status of shipyard automated procurement, and the systems presently being used by the procurement activities providing support at these shipyards. This chapter then describes three automated procurement systems which are currently available. Primary attention is focused on the APADE system, since it is recognized by the Naval Supply Systems Command as the official automated procurement system for the Navy Field Contracting Activities.

Chapter V identifies productivity improvement techniques and describes a Purchase Division productivity improvement study conducted by the Navy Personnel Research and Development Center, San Diego, CA. The thrust of this chapter is to first describe the importance of personnel motivation and ways in which it can be achieved. Also the Navy's civilian personnel reward system is discussed as well as the productivity incentives available through the Navy's Buy Our Spares Smart (BOSS) program. Various motivational tools are mentioned in addition to the monetary incentive programs, but more attention is given the latter because of the emphasis given this method in both the private and public sectors. Finally, this chapter reviews an actual study of productivity improvement at a naval shipyard purchase office.

Chapter VI presents the researcher's summary, conclusions, and recommendations. Key aspects of the report are first reviewed in the Summary section of this chapter. Next, the author's conclusions, based on interviews and information contained throughout the report are presented. And finally, a list of 8 general recommendations for improving procurement support at naval shipyards is included in the Recommendations portion.

II. THE PROCUREMENT PROCESS

A. SIGNIFICANT CHANGES IN THE PROCUREMENT REGULATIONS

1. Background

Until the beginning of World War II Congressional legislation governing federal procurement was a mass of uncoordinated laws. Individual guidelines were used for the procurement of each commodity. But the policy was consistent with respect to the authorized bid procedures. Advertised bidding was the generally approved method. However, immediately following the start of World War II in 1941, the First War Powers Act was passed by Congress which authorized negotiation. Due to rapidly changing technology, advertised purchasing was deemed an inappropriate technique in modern warfare and negotiation became mandatory. [Ref. 5: p. 645]

To enhance the purchasing effort during the war, purchasing rules had been temporarily relaxed. After World War II the government had to decide the procurement rules that were needed and should be used during a peacetime environment. The issue was studied at great length and finally Congress passed the Armed Services Procurement Act of 1947 (ASPA). ASPA achieved two significant goals. First, it established procurement policies for use during national emergencies which can be put into effect by either the President or Congress. Second, it required that the negotiated procurement method be used during both peacetime and wartime. [Ref. 5: p. 646]

The next major piece of legislation affecting federal procurement came about in 1972 when Congress established the Commission on Government Procurement. The primary goal of the Commission was to review the entire federal procurement process and make recommendations to Congress to improve it.

2. Office of Federal Procurement Policy

Acting on the Commission's recommendations, Congress established the Office of Federal Procurement Policy (OFPP) under the Office of Management and Budget (OMB) in 1974. Before the creation of OFPP, there was no single or central organization within the executive branch of the government whose purpose was to consider the effects of procurement practices or to evaluate the personnel capabilities of those who actually perform the federal purchasing operations. OFPP was given the

primary charter of providing central policy direction and developing a uniform procurement system for the government. [Ref. 5: p. 647] OFPP provides policy direction by issuing OMB circulars, OFPP policy letters, and various other policy documents. It is the only entity with executive branch-wide authority for procurement policy.

3. **Federal Acquisition Regulations (FAR)**

The most notable project of the OFPP has been the development of the FAR which began in January of 1978 and was implemented in April of 1984. The FAR is a single procurement regulation which replaced the Federal Procurement, Defense Acquisition, and NASA Procurement Regulations. It is issued by mutual agreement between the Secretary of Defense, the Administrator of NASA and the Administrator of GSA. The executive branch maintains the FAR under the auspices of the Civilian Agency Acquisition Council (CAAC) and the Defense Acquisition Review Council (DARC). The DARC is staffed by DoD and NASA while the major civilian agencies staff the CAAC. [Ref. 6: p. 107 & 109]

However, according to the Packard Commission Report, the FAR has not achieved what its planners intended. For example, the Commission found 394 different regulatory requirements in the FAR and DFARS that are tied to as many as 62 different dollar thresholds. [Ref. 7: p. 54] Moreover, the Navy field purchase people must be familiar with and adhere to guidance provided in 4 separate regulatory manuals--FAR, DFARS, NARSUP, and SUPARS as well as any other applicable directions or instructions.

4. **Competition in Contracting Act of 1984**

Congress passed the Competition in Contracting Act of 1984 (CICA) three months after implementation of FAR requiring a major rewriting of the regulation [Ref. 6: p. 103]. The act was passed as Title VII of the Spending Reduction Act and Deficit Reduction Act of 1984.

CICA is concerned with various aspects of government operations, but it is the competition in contracting portion that has had the greatest impact on contracting operations. This is particularly true of industrial activities such as naval shipyards. Many of the work activities and material requirements at naval shipyards do not lend themselves to competitive procedures. In the opinion of some experts the mandating of competitive procedures is an additional investment cost which creates time delays and adversely impacts on total costs and shipyard schedules. The major impact is reflected

in the necessity for advanced procurement planning prior to initiating the procurement request. Before CICA, advanced planning and market research required to effectively compete the government's purchase requirements and develop new or additional sources for supplies, had not been a major concern of these activities for most requirements necessary for repair and overhaul work.

CICA directs agencies in very specific language to compete all government requirements to the maximum practicable extent and requires certain approval levels for any requests for exception to "other than full and open competition." As such it has removed much of the Contracting Officer's flexibility in deciding whether or not to compete the government's requirements.

Until the enactment of CICA, Congress left most administrative detail to the respective administrative agencies of the government. CICA however, is a significant departure from this policy. This is a subtle but important development. Administrative regulations and policy are relatively easy to change by an administrator, but statute modification is a difficult and lengthy process. Once passed and implemented, statutes are rigid in comparison to policy. Also, the fact that CICA was legislated means that the administrative detail spelled out in the legislation is more likely to be followed and enforced.

The second major impact of the CICA legislation focused on the requirement of synopsising proposed purchase actions in the Commerce Business Daily (CBD). Until recently CICA required the synopsis of virtually all solicitations for requirements estimated to cost $10K or more for a period of 15 days prior to the release of the solicitation to industry. CICA further requires that the deadline for receiving bids and proposals is not less than 30 days after the solicitation. [Ref. 6: p. 130]

However, Congress recently provided some relief from this requirement by increasing the threshold to $25K in DoD's 1987 authorization act. This has effectively brought small purchase requirements (procurements for less than $25K) in line with simplified purchase procedures and accordingly has reduced the PALT associated with these actions.

5. Buy Our Spares Smart (BOSS)

Even before CICA was enacted, the Navy had already implemented a new program to attack spare parts procurement problems. This resulted from many overpricing situations discovered during routine audits conducted by government auditors and later reported and sensationalized by the media and Congress. BOSS

applies to all procurements, and it's major focus is to satisfy the Navy's needs competitively and at a fair and reasonable price. Today BOSS has been institutionalized within the Navy. BOSS implements the policy of CICA by requiring the establishment of Competition Advocate positions at all major NFCS activities (activities having $25K and higher procurement authority), establishment of competition goals, and competition results reported annually to the Naval Supply Systems Command. This has placed even greater pressure on the Contracting Officer to seek competition in all procurements by "breaking out" items or competing requirements which heretofore were believed to be sole source. Unquestionably this has resulted in more competitive procurements, but it has also created additional administrative workload and delays throughout the process.

B. PURCHASE PROCEDURES AT NAVAL SHIPYARDS

1. Discussion

Familiarization with shipyard requisition processing is helpful in providing insight and an appreciation for the requirements of the procurement system, associated problems, and in developing recommendations to improve the process. This section describes the requisitioning and procurement process from receipt of the requisition by the Supply Department to award of the order or contract at the shipyard. A section has been included on requisition processing at Mare Island Naval Shipyard. Mare Island was chosen largely because it has been selected as the pilot or lead shipyard for the implementation of the Naval Supply Systems Command's various procurement improvement initiatives and recommendations from the Coopers & Lybrand shipyard study. Although some procedures may vary from one shipyard to the next because of management prerogatives or physical constraints, the process remains essentially the same among these activities.

All eight shipyards operate under the formal procedures of the Shipyard Management Information System/Material Management (SYMIS/MM) System which basically tracks and accounts for material requirements generated by the shipyard. In addition to the purchase segment of the program (PUR), some shipyards have locally developed their own unique automated procurement systems in order to facilitate the procurement process and comply with requirements from higher authority. As will be discussed in Chapter IV, these systems lack the capability and technology currently available in today's ADPE market.

2. **Mare Island Naval Shipyard Requisition Processing**

The standard document used for requisitioning material is the Job Material List (JML) and normally is prepared by the shipyard's Planning Department for material required for the overhaul [Ref. 8: p. 1]. JML's are currently written on coding sheets and then are handled as normal (routine) requirements or are handled as "walk-thru" (urgent) requirements.

Approximately 33% of the JMLs are processed as walk-thru items encompassing the following procedure:

- The JML is hand-carried to the Supply Department Material Expediting Branch, (Code 515), where it is first screened and then entered into the Material Management (MM) system on-line.
- The JML is then hand-carried to the Technical Division (Code 540), for technical review and to the Purchase Division, (Code 530), for purchasing action (In the case where the shipyard has no procurement authority, the JML is forwarded to the appropriate NFCS contracting activity).

The normal JML handling consists of delivering the JML to Code 515. Data elements are screened by Code 515 personnel and the JML is then forwarded to the Computer Services Division, (Code 110), to be key entered into a file. The JML is returned to Code 515 for distribution. Code 540 reviews it for technical accuracy and forwards it to Code 530 for purchasing action.

Code 540's major responsibility is to determine that the data provided on the JML are adequate to allow a purchasing agent to buy the item. This includes verifying and validating specifications and/or salient characteristics (purchase descriptions) to ensure that they are complete and accurate. Code 540 must also ensure that the necessary ordering data and information provided are sufficient to allow for proper competition of the requirements. The first step is to make sure that the item being requested does not have a federal stock number. (Approximately 10% of the JMLs forwarded to Code 540 are for material carried in the Supply System.) This check is accomplished in the following ways:

- a search is made of the PUR system which is a cross index of local stock numbers and part numbers, or
- a search is made over the Technical Logistics Reference Network (TLRN) terminal, (an automated system that crosses part numbers or other descriptors to National Stock Numbers (NSN)), using several descriptors to attempt a cross to a federal stock number.

If neither an NSN nor a local stock number exists, Code 540 assigns a local stock number, completes and attaches various additional ordering data and Material Safety Data information if required, and forwards the JML to Code 530 for purchase. If an NSN is identified, the NSN is added to the JML and the JML is returned to Code 515 where ordering through the Supply System is initiated.

The next step is to check to insure that the description is complete enough to allow the Code 530 to identify a vendor, and the product to the vendor. When the description is approved or modified the description is entered into the PUR system using the MM terminal for a shop stores, Direct Material Inventory (DMI) or Direct Material Nuclear (DMN) item and into the MM system for end use items.

When the JML is received in Code 530, it is logged into the MM system and it is categorized into one of three different areas:

1. Items with a value under $25,000 (small purchase).
2. Nonnuclear items with a value over $100,000 (to be purchased by NRCC Long Beach Detachment)
3. Nonnuclear items with a value between $25,000 and $100,000, and nuclear items with a value over $25,000 (MINS contracts).

The JMLs with a value less than $25,000 are separated by commodity classes and forwarded to small purchase buyers. The first and largest problem for the buyer is to find at least three qualified vendors for items over $1,000.

Currently the tools available to locate vendors include the Thomas Register, telephone books, vendor brochures, vendor catalogs, and reference card files developed by each buyer. Often the individual buyer must use telephone calls to a vendor, to Code 540, or the individual who originated the JML in order to identify other vendors.

After a vendor or vendors have been identified the buyer receives bids over the telephone for 80-90% of the items purchased, completing a worksheet to record the bids. Written Requests For Quotation (RFQ) are mailed to vendors when the material being procured has very technical descriptions, several items are required, or when the vendors refuse to give price quotes over the telephone. If telephone quotes are received, the buyer determines the lowest bidder, documents that recommendation on the worksheet, and forwards the worksheet and the JML to their purchasing supervisor for review and then to the clerical section preparing the purchase orders. If fewer than three qualified vendors can be identified for material costing more than $1,000, justification must be provided in the buyer's work package.

If a written bid request is to be mailed out, the buyer provides instructions to the individual responsible for the clerical work of putting the bid documents together by checking the appropriate blocks on the worksheet to select enclosures and by writing other instructions on the worksheet.

The bid document is assembled by selecting the appropriate instruction sheets/paragraphs, waxing (cutting and pasting) the information together, and a minimal amount of typing. Often a technical description of the item provided by the initial requestor or by Code 540 is attached to the document. The entire package is then duplicated and copies are mailed to the identified vendors.

Vendors are usually given 10 to 30 days to respond to the bid request. The length of time depends on the urgency of the requirement, how stringent and detailed the specifications are, number of items being procured, and expected mail delays. When bids are received, the buyer holds the bids until the 10-30 days have elapsed and opens the bids simultaneously. The buyer annotates the bid results on the worksheet, makes a recommendation for vendor award, and passes the documents to the appropriate purchasing supervisor for review. After the supervisor reviews the bid documents and the buyer's recommendation, the package is forwarded to the clerical branch for purchase order preparation.

When a bid package is received in the Purchase Services Branch, (Code 532), for preparation of the purchase order, the latter is prepared by typing the purchase order and by adding two additional instruction sheets. The purchasing information is updated into the MM system including the purchase order number, the vendor number, and the price. The vendor number is manually checked to make sure that the Comptroller will be able to pay the vendor when the material is received.

After the purchase order is in the mail and the MM system has been updated, all purchasing documents are organized and fastened into a folder which is then color coded and filed. These files receive relatively heavy use by a number of individuals involved in the follow-up or post-award process.

Nonnuclear items with a value between $25,000 and $100,000, and nuclear items having a value greater than $25,000 are directed to the contract negotiators, whereupon vendors are located, bid documents are created and sealed bids are received. Bids for these items must be locked up, but, after bid opening, are available to interested vendors for review. Over 90% of all contracts are negotiated. The bid documents and contracts are created using a clerical force separate from those creating

the less than $25,000 documents. Post-award administration of these actions is performed by the Contract Negotiators. [Ref. 9: p.27 & 28] Figure 2.1 lists the approximate times involved for a typical requisition to be processed by the various responsible codes throughout the requisitioning process. [1]

Shipyard Procurement	*Days*	*Cumulative Total Days*
P&E (from preparation until receipt by Supply)	05	05
Receipt and processing of JML by Code 515	06	11
Receipt and processing by Code 540	03	14
Receipt and contract award by Code 530 (PALT)	32	46
Vendor (manufacturing and shipping lead time)	25	71
Receipt processing (Code 560)	05	76
Total elapsed time	76	

Figure 2.1 Requisition Processing Times.

The Contracting Officer is responsible for the contract or purchase order until it has been closed which is usually after the material or service has been received and the contractor's invoice has been paid. As such a separate branch which falls under the direction of the Purchase Officer is tasked with following up on outstanding orders and resolving minor problems or directing problems of a contractual nature back to the contracting officer. Because of a limitation of ADPE resources and the volume of outstanding orders, most of the following up is done on an exception basis rather than a systematic and organized approach. That is, follow up action is typically initiated by the requisitioning code when the material has not been received by the required delivery date specified in the contract or purchase order.

[1]The data for figure 2.1 were collected from a sampling of FY87 small purchase files at NSY Mare Island.

C. NAVAL SHIPYARD PROCUREMENT PROCESS

1. Environment

The vast majority of procurements necessary to satisfy the shipyards' material requirements are accomplished by the "small purchase" buyers or by using the "simplified purchase" procedures. These terms are somewhat misleading when applied to the mission of providing the purchase support for shipyards. The definitions refer to acquisition rules and regulations applicable to purchases for $25K or less (small purchases) vis-a-vis procurements greater than $25K (large purchases). And although the regulations themselves may not require certain procedures for small purchase buys that are required for large purchase buys, (e.g., a detailed acquisition plan or filing of business clearances, etc.), the procurements themselves can be equally or even more demanding or difficult and time consuming.

Material requirements range from off-the-shelf, easily obtainable-type items (such as nonstandard office supplies, furniture, tools, publications) to complex and technical items such as fittings, fasteners, valves, and piping for nuclear applications requiring detailed plans, drawings and specifications. In addition to material procurements for the "nuclear world" of a general nature, procurement personnel at the "nuclear" shipyards procure specialized nuclear reactor and system components, and sensitive submarine air, water, and hydraulic material and in some instances material needed for R&D work. These procurements entail rigorous scrutiny by the responsible ordering code, complex and detailed ordering data, testing, inspection, and acceptance requirements, requiring special and more complex purchasing procedures.

Regardless of the anticipated cost of this type of material, the same unique and arduous procedures must be followed to ensure that the contractor provides the proper material which meets all the exacting specifications required by the shipyard. As such, procurement of this type of material is highly labor intensive and time consuming. Also due to the complex nature of the ships' advanced weapons systems, the services of technical representatives are often needed to determine the extent and nature of repairs needed or to even effect repairs themselves. Services of this nature are typically only available from a single supplier and usually are required on short notice.

All these requirements must be satisfied in an environment of ever increasing pressure from the Congress and the public for more and more competition. Unfortunately, Congress did not exempt shipyard procurements from the competition requirements of CICA. As discussed earlier, CICA has mandated stricter

interpretation and greater enforcement of competition--all requirements will be competed to the maximum extent practicable. And the Navy's BOSS program which is now institutionalized within the Navy, ensures compliance with these new and stricter competition requirements.

But these types of purchase requirements are typically not conducive to competitive procurement procedures., i.e., the time and effort needed to develop new or additional sources. Also many requirements are dictated by higher authority and as such competition is restricted to one or only a few suppliers. Nevertheless, competition is aggressively pursued and the results have been highly successful. This is impressive particularly in view of the stringent specifications and ordering requirements invoked and the pressure to procure material within short time frames. Figure 2.2 shows competition statistics for the shipyards having purchase authority for which the data are available. [Ref. 10] The data indicate the percentage of total dollars of contracts awarded competitively by activity. The information reflects across the board improvements in competition since the statistics were first maintained for fiscal year 1982.

2. **Shipyard Procurement Authority**

The Naval Supply Systems Command is the Head Contracting Authority (HCA) for all NFCS activities. These activities include the NSC's, NRCC's, and shipyards. As such, NAVSUP has responsibility for policy implementation throughout the NFCS. It also delegates procurement authority and determines what level of contracting authority each activity should have.

Shipyards currently have varying procurement authority ranging from zero to an unlimited amount. The individual shipyard procurement authority shown in Figure 2.3 was obtained from personal interviews. The amount of authority given a particular shipyard is based on the procurement needs of that activity. The distance from a major Naval Supply Systems Command field contracting activity is evidently the main determining factor of individual procurement authority. Additionally, though, individual management philosophy plays a key role in requesting specific thresholds of procurement authority or any procurement authority at all. Some of the key considerations for these activities include:

- staffing
- management workload
- compliance with rules/regulations
- training

- facilities
- satisfactory service being provided from a major NFCS activity

In general, for those activities currently without procurement authority, the additional cost of overhead and the perceived demand on management outweigh any perceived benefits from having procurement authority. In other words, while it may be felt that this is perhaps not the ideal situation (none or restricted procurement authority) in terms of overall control of the material requirements destiny equation, it is better than having to manage and pay for the service. [Ref. 11] Nevertheless the Coopers & Lybrand study explains that since shipyard commanders are held fully accountable for their operations, they should be provided requisite authority for mission accomplishment [Ref. 12: p. I-1]. It argues that in order for the shipyard commander to have effective control of his operation, he should have procurement authority at an appropriate dollar level to control 90-95% of all procurement actions (numbers) and 90-95% control of total dollar value contracted.

COMPETITIVE PERCENTAGES

Shipyard	FY82	FY83	FY84	FY85	FY86
Norfolk	48.1	56.5	81.4	86.4	68.4
Mare Island	69.0	82.3	75.4	89.6	92.6
Portsmouth	36.4	36.3	75.5	55.3	56.3
Pearl Harbor	60.6	67.7	98.1	97.0	99.9

Figure 2.2 Shipyard Competition Statistics.

Coopers & Lybrand developed a model useful in determining the purchase authority needs of the shipyard based on this rationale. Figures 2.4 and 2.5 illustrate examples of the application of this model. [Ref. 12: p. I-4 & 5] To determine the requisite authority, a logical breakpoint is selected which will give the shipyard from 90% to 95% direct control over dollars procured and procurement actions. The dashed lines in Figures 2.4 and 2.5 delineate a 90 to 95% band indicating the percentage of procurement requirements (actions and dollar value) which this model

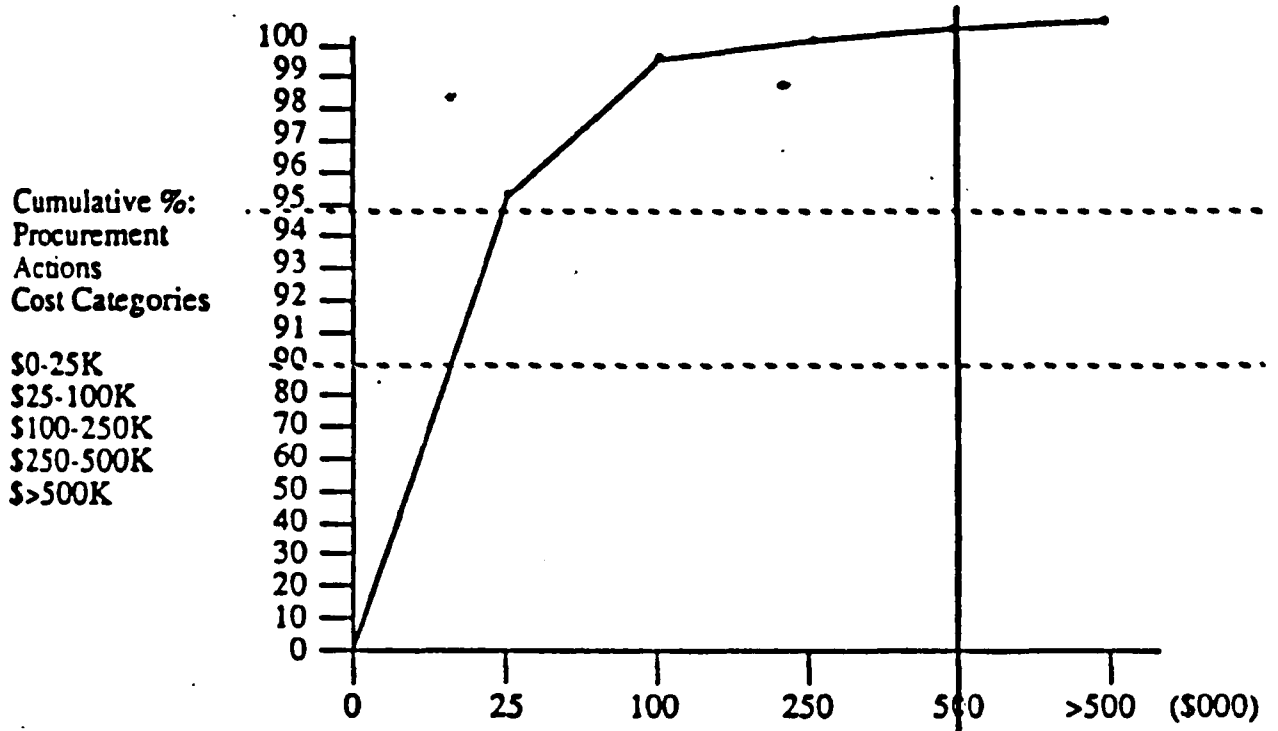
Shipyard	*Purchase amount*	*Supporting Field Contracting Center*
Portsmouth	unlimited	n/a
Philadelphia	$100K [1]	NRCC Philadelphia, PA
Norfolk	$500K	NSC Norfolk, VA
Charleston	none	NSC Charleston, SC
Puget Sound	none [2]	NSC-Puget Sound Bremerton, WA
Mare Island	$100K [3]/ unlimited nuclear	NRCC San Diego Det. Vallejo, CA
Long Beach	none	NRCC San Diego Det./ NSC San Diego, Det. Long Beach, CA
Pearl Harbor	$100K [3]/ unlimited nuclear	NSC Pearl Harbor, HI

[1] exclusive of procurements for ADPE and services in excess of $25K
[2] NSC Code 200 is co-located with the shipyard Supply Dept.; NSY has limited BPA authority.
[3] exclusive of procurements for services in excess of $25K.

Figure 2.3 Shipyard Purchase Authority.

suggests the shipyards should have direct control over. The point of cumulative percentage of total dollars (or actions depending on which graph is used) is then plotted and a vertical line is then drawn from this point to the horizontal axis. This intersection reflects the amount of purchase authority required by that particular activity. [Ref. 12: p. I-2] As examples of the implementation of this methodology, the procurement authority at both Mare Island and Philadelphia shipyards was recently increased to $100k to accommodate this model.

Once the appropriate amount of procurement authority has been authorized, the actual administration or exercising of that authority by the individual activity then becomes the key issue not only in terms of support to the shipyard but in terms of retaining that contracting authority. For example, the contracting authority was severely restricted for one of the shipyards and another received a grade of marginally satisfactory on its Procurement Management Review (PMR) due to difficulties in managing their contracting authority in 1983. The Purchase Officer must carefully



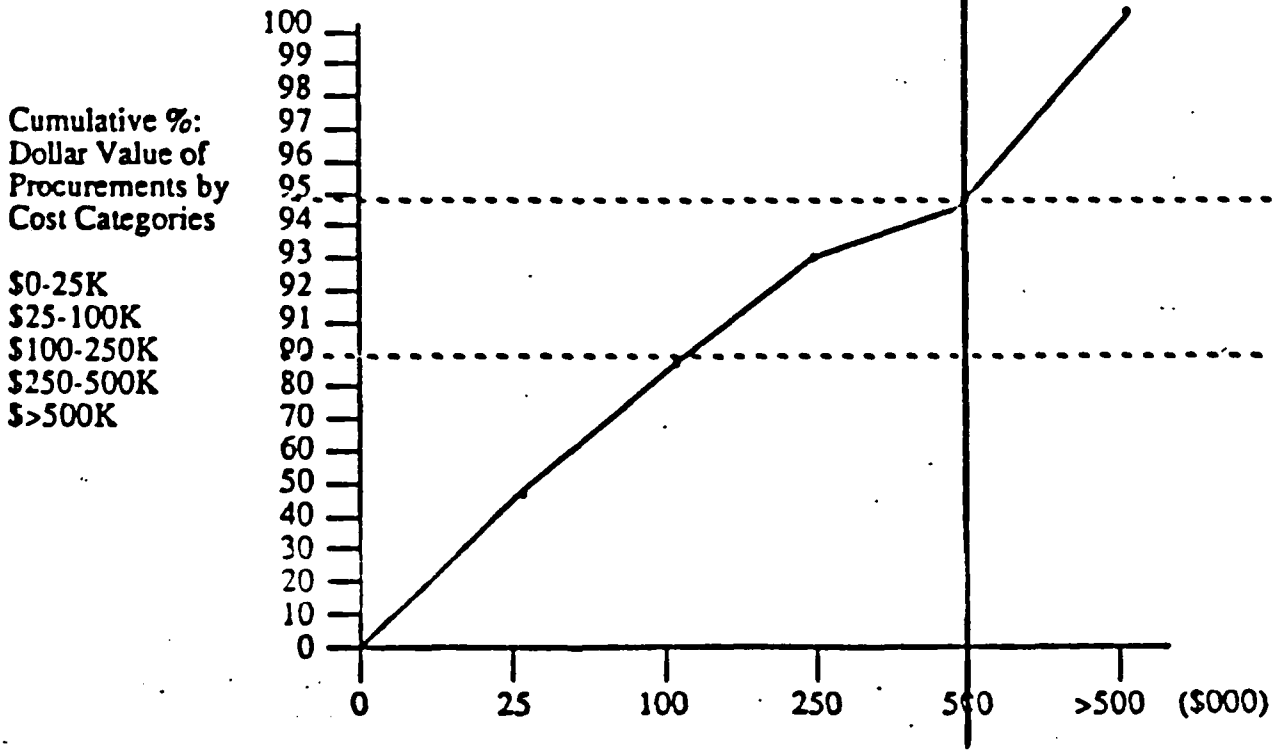
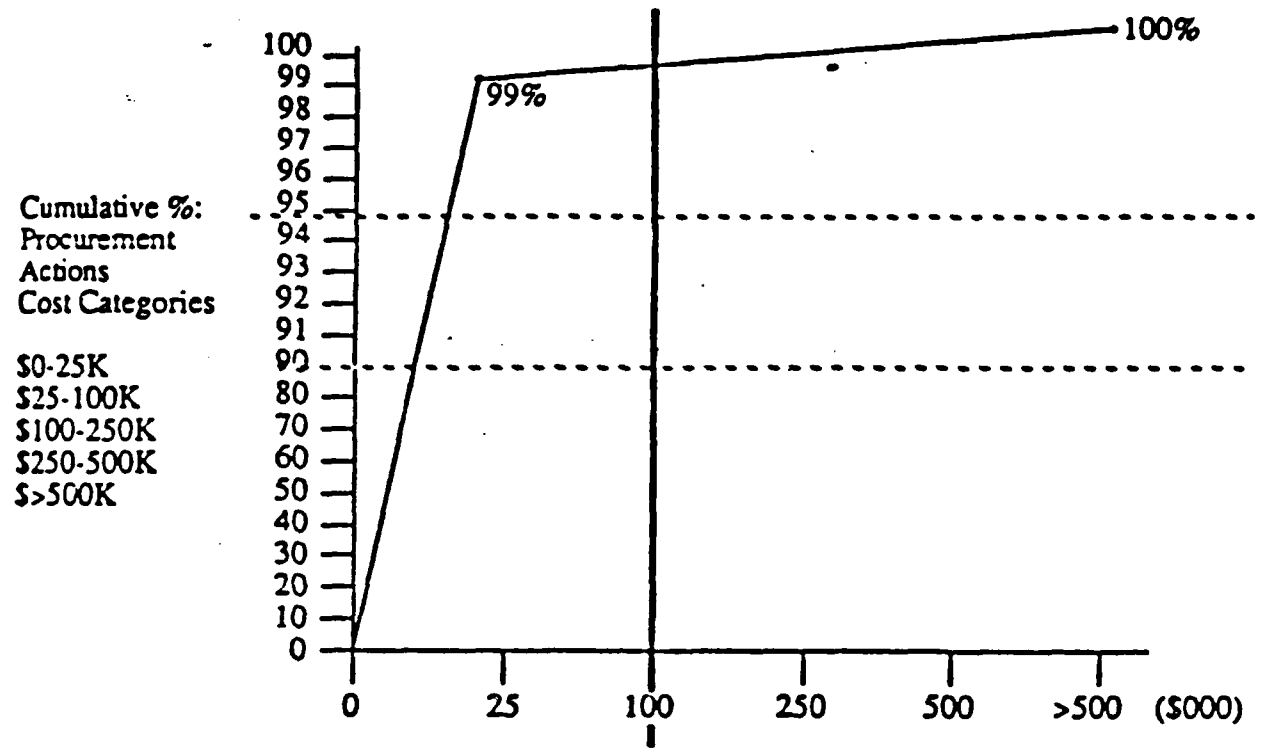


Figure 2.4 Norfolk Procurement Authority Matrix.



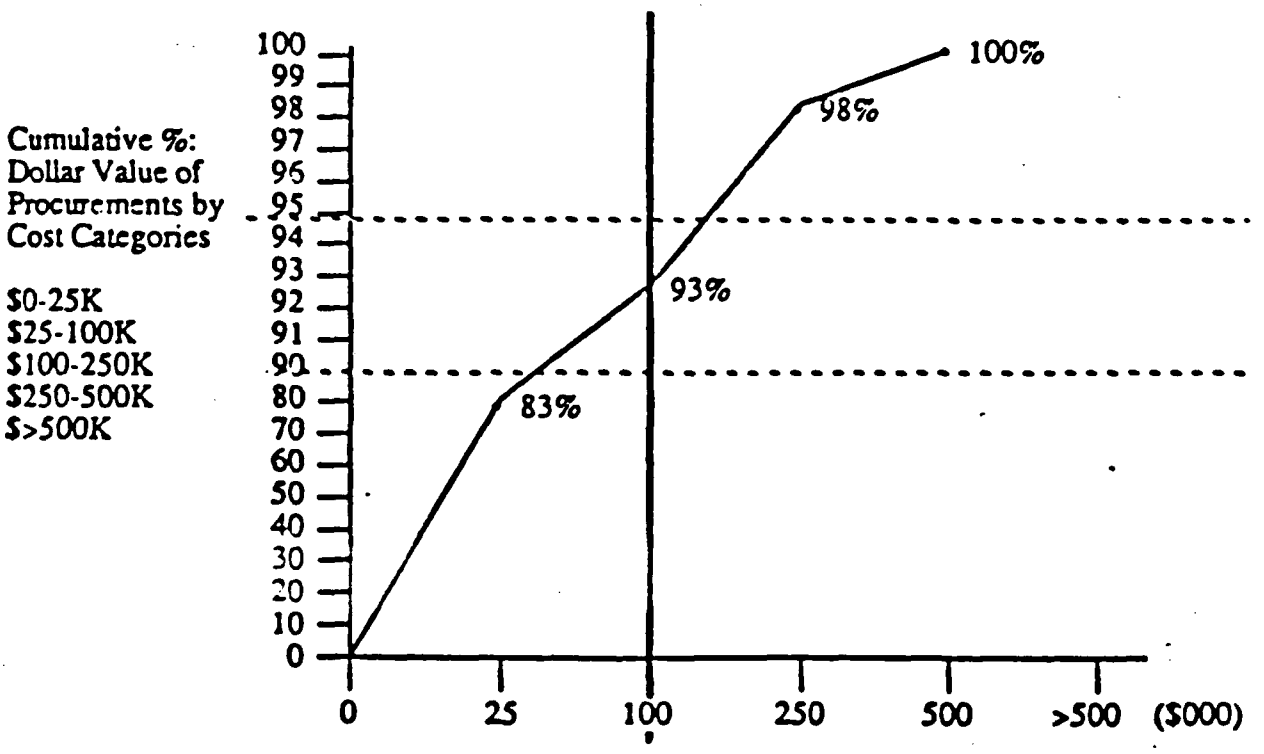


Figure 2.5 Mare Island Procurement Authority Matrix.

provide the proper support to the shipyard mission and at the same time balance this with proper compliance with the myriad of contracting rules and regulations which are to be uniformly applied in the federal procurement process. In order to be effective, the Purchase Officer must solicit and receive the support of top management and production personnel.

While all purchasing activities of the Navy Field Contracting System (NFCS) are responsible for conducting their operations with strict adherence to the FAR, DoD Supplement to the Federal Acquisition Regulations (DFAR), the Navy Acquisition Supplement (NARSUP), the Navy Supply Acquisition Regulations Supplement (SUPARS), and other relevant instructions and regulations, the Procurement Management Review (PMR) Team, an autonomous auditing branch of the NFCS, has oversight management responsibility.

At present the shipyards having procurement authority are performing the task in a satisfactory manner based on a review of recent PMR's. PMR's are reviews of the contracting function usually performed by the regional major field review team (NRCC's) or in the case of NRCC's and NSC's by a team comprised of NAVSUP personnel and contracting experts from other major NAVSUP field contracting offices. These audits are normally conducted at 18-24 month intervals.

Of course with the emphasis being placed on production (repairing/overhauling naval vessels), it becomes a difficult task to objectively and uniformly apply the contracting rules and requirements to each procurement action. This is easier to appreciate when considering the large volume of procurement requirements processed at the shipyards. Figure 2.6 shows the volume of shipyard transactions for which the data are available [Ref. 13: p. 10 & 11]. The first and second columns reflect the number of purchase actions for less than $25,000 and greater than $25,000 respectively. The third column is the percentage of that activity's total actions of total NFCS actions. The fourth, fifth and sixth columns reflect this same information in dollars and percent of total dollars awarded.

Time is usually the overriding concern in terms of ordering and receiving material at shipyards due to the nature of the overhaul effort. Although the shipyard attempts to have all necessary material ordered and staged prior to the commencement of the overhaul, it is not always possible to do so. This implies that the shipyard does not always have the luxury of processing procurement requirements in the "normal mode." This may result from not knowing what the requirements will be until the ship

Activity	No. transactions (< $25K)	(> $25K)	% total*	Amount ($000) (< $25K)	(> $25K)	% total*
Norfolk	20,139	314	0.76	26,565	45,796	0.63
Portsmouth	12,758	384	0.49	19,566	51,494	0.62
Mare Island	24,425.	89	0.91	31,471	5,383	0.32
Pearl Harbor	9,619	22	0.36	11,692	1,728	0.12

*% of total NFCS activity

Figure 2.6 Shipyard Purchase Action Volume FY 86.

is in dry dock and the shipyard has had an opportunity to open and inspect the applicable equipment and systems; last minute scheduling of overhauls, SRAs, and repair work; insufficient time and resources to conduct a comprehensive ship check and work package prior to the ship's arrival; or other material deficiencies discovered during the course of the overhaul.

Also, very little management attention is focused on pre-planning. This is particularly true for open purchase requirements. Personnel at all levels are more actively involved in expediting material procurement and receipt than in pre-planning those same requirements.

These problems lead directly to the apparent overuse of high priority requisitions which makes it even more difficult for the purchasing activity to schedule workloads in a systematic manner and to comply with existing acquisition regulations while at the same time satisfy the shipyard's requirements. The procurement status is closely monitored by Code 515 personnel and in the case of high priority requirements, the requisitioner becomes involved in expediting the procurement as well. This leads to even further disruptions for the buyer and an inefficient procurement process. In a recent report to the Secretary of the Navy on the issue of priority usage in the Navy, GAO stated that:

> Priority system abuses slow requisition response time by distracting inventory managers and delaying procurement actions [Ref. 14: p. 20].

In 1983, GAO reported that Navy shipyards were abusing the issue priority system. The statistics shown in Figure 2.7 are the percentage of total requisitions by activity assigned a high priority. They indicate that in July 1985 all eight naval shipyards exceeded a Navy guideline (OPNAV INST. 4614.1F) that no more than 50% of shipyard requisitions should be categorized as high priority.

	Percent Assigned A High Priority	
Shipyard	Aug 1983	July 1985
Norfolk	72.4	79.6
Portsmouth	51.1	75.0
Long Beach	81.2	65.4
Mare Island	79.3	63.8
Pearl Harbor	*	57.9
Philadelphia	71.7	56.6
Charleston	66.5	55.5
Puget Sound	*	54.5

*Did not exceed the 50% guideline.

Figure 2.7 High Priority Requisitions.

During the research portion of this report, the lack of complete ordering information and specifications was frequently noted as a major problem in procuring material for these activities. This results in further delays in receiving the material and added work for the various responsible requisition processing branches and divisions and of course the procurement personnel.

But many of the acquisition regulations and requirements are simply not consistent with the support requirements of industrial activities. Albeit the regulations do allow some flexibility by providing exceptions, the emphasis on adhering to the rules to the letter and increasing competition very nearly negate this flexibility. It is apparent that the procurement system and the mission of shipyards as now designed are somewhat incompatible.

Many of the initiatives which will be discussed in the following chapters owe their impetus to the many recent changes in the acquisition rules and regulations. These recommendations and initiatives are also the result of the ever increasing emphasis on competition coupled with the impact these factors have had on the installation to accomplish its primary mission.

D. SUMMARY

Acquisition rules and regulations have changed significantly over the past several years. Today the emphasis is on competitive procurements as legislated by Congress with the enactment of CICA and the institutionalization of it within the Navy through BOSS. Providing procurement support for naval shipyards is indeed difficult and demanding. Requisition processing and the procurement system are complex, labor intensive and time consuming. The shipyard's basic mission is to repair or overhaul naval vessels on or before schedule at or below the projected cost. They must remain competitive with private shipyards and adhere to the plethora of government rules and regulations governing material acquisition. However, procurement dollars represent only a very small portion of the overall repair and overhaul costs experienced by the shipyard--labor being the greatest. As such the shipyard's main emphasis is in getting the necessary material in order to effect repairs timely in order to reduce labor costs and to preclude any disruptions in the overhaul process.

The acquisition regulations on the other hand focus on satisfying the government's material needs in a very strict and regulatory manner requiring very specific actions throughout the procurement phase. Acquisition rules in many cases are a function of other government goals such as socioeconomic considerations. To this end, acquisition rules and regulations tend to focus support of these programs over the absolute need of the government's material requirements. Often times the goals of the two are incongruous. Understandably, from the perspective of the production side of the house, the procurement process poses a real and sometimes unnecessary challenge in satisfying the material needs for the overhaul. It is the intent of this report that the adoption of many of the initiatives presented in the succeeding chapters will help to alleviate some of this conflict and assist the shipyards to accomplish their mission.

III. SHIPYARD PURCHASE STREAMLINING INITIATIVES

A. INTRODUCTION

1. Material Requisitioning Lead Time

Lead time involved in ordering and receiving material at the shipyard can be the determining factor of whether production work will be interrupted or rescheduled resulting in job delays and even extension of overhauls. Needless to say lead time can have a significant impact on the successful completion of shipyard work. It can be defined as the elapsed time from submission of a material requirement, the time required for actual requisition processing to the procuring activity, contract award, receipt of material by the shipyard, and final delivery of material to the end user. Most of these activities and their average days were presented in Chapter 2, Figure 2.1. Another area which can have a significant impact on work schedules is the actual requirements determination itself. Often this is accomplished too late in order to requisition, order, and receive the required material by the actual need date. Although this list is not all inclusive it emphasizes that lead time encompasses several activities, many of which the Contracting Officer has little or no control over. As was pointed out in the limitations portion of this paper, a comprehensive study of these areas was not attempted. Accordingly, this discussion is limited to specific areas which the Contracting Officer does manage or can effect.

2. Procurement Administrative Lead Time

The lead time from the time that the contracting activity receives the requisition until placement of a contract or purchase order is commonly referred to as Procurement Administrative Lead Time or PALT. The Naval Supply Systems Command (NAVSUP) has established specific goals for certain types of procurements for which the contracting activity is encouraged to meet. These goals are listed in Figure 3.1. The NAVSUP goals are "recommended" goals and should not be construed as minimum or maximum processing times. Yet, they are used as a general gauge in measuring the performance of the contracting function.

Many of the current initiatives and recommendations for improving the material procurement function are aimed at reducing PALT either directly or indirectly. Accordingly, this discussion focuses on new methodology, procedural changes, and

CONTRACTS

Contract Type	PALT Goal (Average Days)
Formal Advertising	90
Supply	95
R&D/Services	115
Sole Source	130
Negotiated Competitive	155

SMALL PURCHASES

Purchase Order	PALT Goal (Average Days)
$0-$1,000	19
$1,000-$10,000	23
$10,001-$25,000	40
Unpriced Orders (NTE)	21
Imprest Fund	3
Delivery Orders/ Federal Supply Schedule	8
BPA Calls	
($0-$1,000)	16
($1,001-$10,000)	18

Figure 3.1 NAVSUP Recommended PALT Goals.

modification of acquisition rules or regulations geared towards enhancing and streamlining the procurement operation in order to reduce PALT and improve overall material support at the shipyard. The reader should be aware that while the particular contracting activity providing shipyard procurement support may well be meeting the NAVSUP PALT goals, due to the requirements of an industrial facility, frequently shorter lead times are mandatory. Also, with few exceptions the contracting activities charged with procurement support have limited or no automated systems for

generating procurement statistics at this time. Accordingly, PALT can not be accurately measured for the various categories specified by NAVSUP and listed in Figure 3.1.

B. COOPERS & LYBRAND STUDY

Much of the recent attention of shipyard procurement originated in the Office of the Assistant Secretary of the Navy (S&L) in 1985. The primary concern was that overhauls at Navy shipyards were too lengthy and plagued with cost overruns. With respect to procurement of material, specific concerns included a general feeling that compliance with contracting rules and regulations far outweighed production and operational needs and that the contracting function had evolved into a nonsupport function. The following observations were noted:

- Contracting's performance measures are not related to operational goals.
- The rules don't fit industrial operations.
- People are not properly oriented.
- There is not enough control by operational management.
- Competition without business judgment--a good thing gone too far.

Accordingly, it was felt that the following action should be taken in order to resolve these issues and to turn around contracting support at naval shipyards:

1. There should be a balance between compliance with procurement regulations and operational needs.
2. The procurement function should be integrated with production/operations.
3. More control over the procurement function is needed by operational management.

These concerns resulted in the commissioning of an indepth management study by the management consulting division of Coopers & Lybrand in late 1985. [Ref. 4] Coopers & Lybrand, a big eight accounting firm, was commissioned to assess the Naval Industrial Fund (NIF) activities. The statement of work called for a comprehensive management analysis of NIF activities, drawing upon procedures used in the private sector and to make specific recommendations strengthening the operations of these activities.

The report comprises their review of the eight naval shipyards including over 1,400 interviews, extensive independent observations, and thorough document analyses conducted by personnel experienced in both public and private sector industrial functions. It concludes that the procurement systems at the shipyards are in need of some major overhauling.

The report states that:

> Systems to enhance or ensure cost-effective purchase and delivery of material are not available in the shipyards. Material delivery dates are rarely confirmed or given follow-up attention before the required delivery date has arrived, estimates aren't compared to actuals and "hot item" procedures are overused [Ref. 15].

In June 1986, Coopers & Lybrand submitted an initial listing of 11 recommended policy and regulatory changes to NAVSUP. Action has been taken on these items to determine their desireability and feasibility. Some recommendations have been implemented while others require waivers or statutory changes and have been forwarded to ASN (S&L). [Ref. 16] From August 1986 through November 1986, Coopers & Lybrand submitted an additional 23 recommendations and to date has forwarded a total of 45 recommendations for improving procurement at shipyards. Many of these initiatives pertain specifically to Mare Island Naval Shipyard since it was chosen as the model installation for the study. Nevertheless, most of the recommendations are exportable to the other shipyards.

The following recommendations submitted by Coopers & Lybrand to NAVSUP are intended to enhance the procurement function and improve procurement support at the shipyards. A brief discussion follows each recommendation explaining the consequences of that recommendation.

1. Remove the synopsis requirement for purchases between $10K and $25K: PALT for these purchases will decrease by 51-56 days and the administrative workload of processing the abundance of responses to the CBD will be greatly reduced. [2]
2. Authorize procurement of system items: The argument is that because of the shipyards' FAD, they are at a disadvantage with respect to the issue processing time-frame. Also items to be procured are commercially available and the central item commodity managers frequently return the requisition for local procurement action. By this time 30-90 days have elapsed and the requirement, which may not have been urgently required when first requisitioned, is needed immediatedly. The local purchase organization must now interrupt normal operations in order to satisfy these requirements.
3. Increase the threshold for mandatory sources: Currently specific classes of items are centrally procured. If the estimated cost exceeds $2,500 the requirement must be forwarded to the designated procuring activity. By increasing this threshold to $25,000 the shipyard will be able to better satisfy these requirements locally thereby reducing the lead time for material receipt by

[2]The law requiring synopsis for procurements between $10K and $25K was modified to $25K and above in the 1987 DoD authorization bill.

120-150 days.

4. Allow solicitation of bids from large businesses for requirements for less than $10,000: Currently all requirements for this dollar value are mandatory set aside to small business which effectively shuts out procurement from large business unless a small business can not provide the material. By removing this restriction more sources will become available, competition will increase, thereby simplifying these procurements and reducing PALT.

5. Create a generic organizational structure in the Purchase Division: The division as now organized does not have the capability to do both platform/program management and procurement. The organization structure proposed by Coopers & Lybrand to achieve this goal is illustrated in Figure 3.2.

6. Organize the Purchase Division by commodity groupings: The division organizational structure will respond more easily and adapt better to this existing structure if it is organized similar to the Planning and Production Departments which recognize structural, mechanical, and electrical/electronics disciplines.

7. Improve the Purchase Division's staffing methodology/philosophy: Applying the following principles in staffing the division will result in an improved organization and staffing:

   - The initial number of people assigned should take into account a modestly achievable output based on the learning curve principle.
   - Grade levels should be high enough to attract and retain "buyers" as opposed to "clerical order-placers."
   - The technical buyer concept should be included in the organization.
   - The work flow process may be pre- and post-award functional, cradle-to-grave, or some combination of each.

8. Implement a shipyard procurement automation system: Coopers & Lybrand prepared an implementation plan for the Automated Procurement Tracking System (APTS). The system was tailored to provide for the implementation of the Automated Procurement and Accounting Data Entry System (APADE).

9. Establish a workload processing system based on ship and program-specific priorities: Under this system a single individual, the Workload Director shown in Figure 3.2., would be responsible for assigning a priority indicator code to every requirement. Processing of the requirement is based on this code.

10. Streamline the small purchase pre-award process: A decision model was structured for the small purchase buyer to follow to enable the buyer to effect procurement throughput as quickly as possible.

11. Small Purchase Decision Models: Several decision models were developed to assist buyers to more easily, professionally and uniformly perform their job. These models include buyer screening, mandatory sources, optional GSA schedules, open market purchases, written requests for quotation, purchase order clause/form matrix, and special provisions.

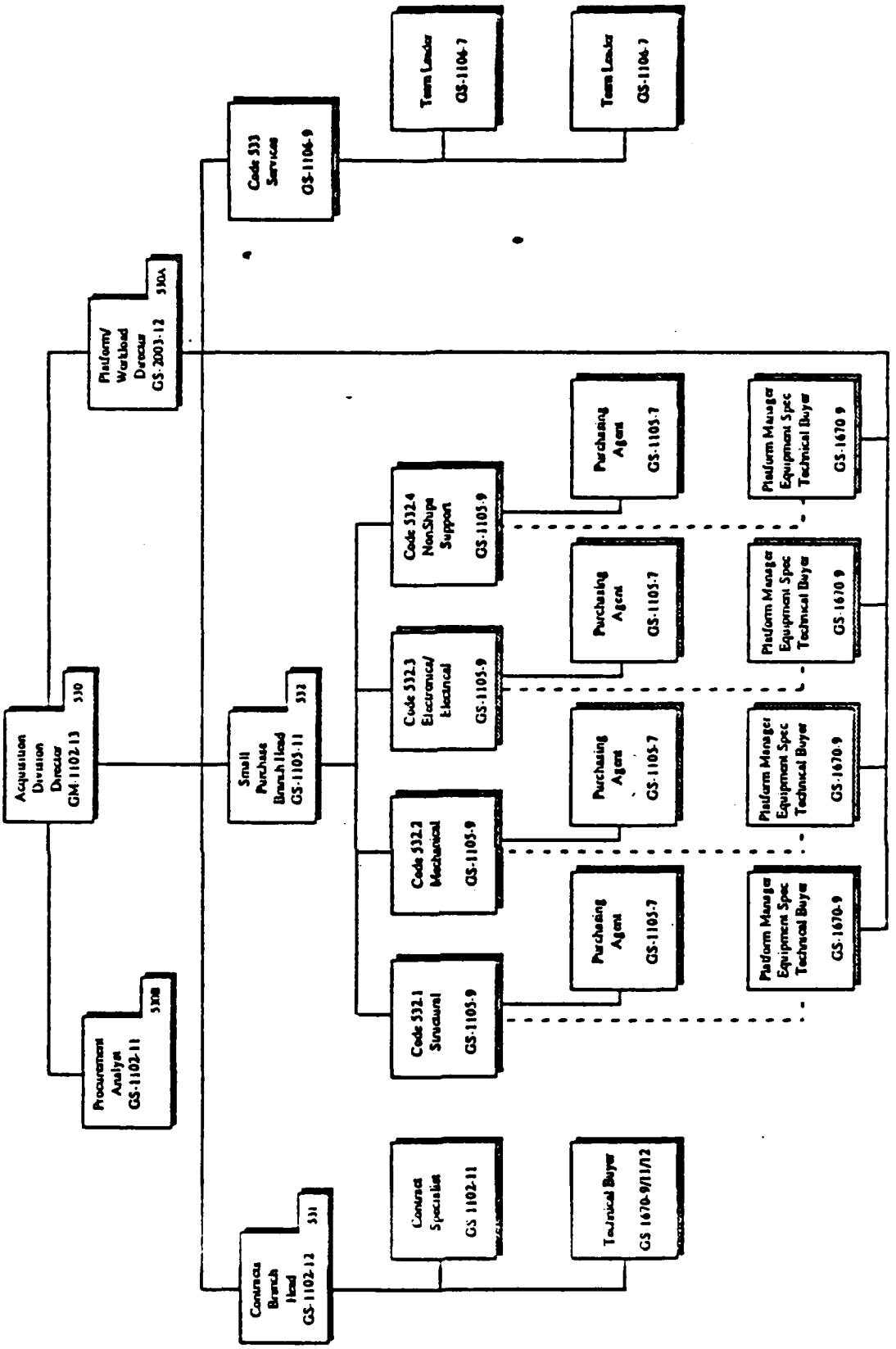


Figure 3.2 Proposed Acquisition Division Organization.

Of course this list is not all inclusive of the multitude of recommendations provided by Coopers & Lybrand. But they are perhaps some of the more significant recommendations from the study and illustrate the areas where change is most needed to improve the procurement support at naval shipyards. The streamlining process has already begun with the implementation of some of these recommendations. Further streamlining and improvements will be achieved through the implementation of the remainder of these and other Coopers & Lybrand recommendations. But first NAVSUP must complete a feasibility study or submit recommendations to higher authority before changes can be effected. Understandably some of the more sweeping recommendations are complex and will take longer to implement than others due to the pervasive ramifications on the NFCS.

C. NAVAL SUPPLY SYSTEMS COMMAND INITIATIVES

1. Shipyard Procurement System Improvements

COMNAVSUP has been working closely with Coopers & Lybrand to implement these recommendations and on several other initiatives to ensure more timely, and dedicated purchase support for naval shipyards. Additionally, NAVSUP has developed and implemented some of its own initiatives. These include such actions as:

1. Locating NRCC Long Beach (now NRCC San Diego) procurement personnel on-site at NSY Long Beach to provide dedicated shipyard purchase support.
2. Increasing NSY Mare Island and NSY Philadelphia authority to $100,000 for supplies.
3. Locating NRCC Long Beach procurement personnel on-site at NSY Mare Island to provide dedicated purchase support for all supplies/services which exceed Mare Island's purchase authority.
4. Conducting NAVSUP contracting management reviews at naval shipyards.
5. Generating several waivers to procurement regulations to simplify shipyard acquisitions. [Ref. 16]

These and other NAVSUP initiatives indicate the conviction of the Systems Command to make improvements in the shipyard procurement process. Raising the procurement authority at Mare Island and Philadelphia shipyards has significantly increased these two activities' control over the purchase of material for the shipyard effort and gives them the needed control of purchase material recommended by Coopers & Lybrand. But perhaps the single biggest initiative being implemented by NAVSUP is the concept of Centers of Excellence.

2. Centers of Excellence

The Packard Commission Report to the President of the United States addresses the benefits of the Centers of Management Excellence concept. The theory underlying this concept is that there will be excellence in an organization where individuals identify with a team, take personal pride in their work, concentrate their unique efforts, develop specialized know-how, and continually explore new and better ways to perform their job. DoD used this concept in 1984 by applying its techniques to managing installations as potential Centers of Excellence. This gave installation commanders more flexibility and authority in managing and running their organizations. [Ref. 7: p. xii] This philosophy is similar to the rationale of the Model Installation Graduate Program described in the next section. The new concept was met with substantial enthusiasm by the field commands and has been deemed a success. The Navy is confident that the concept will have a positive effect on the NFCS as well.

NAVSUP recently initiated the Centers of Excellence in contracting on the West Coast. The main thrust of the Centers of Excellence in contracting is to assign procurement responsibility to certain activities based on dollar thresholds instead of centralizing all procurement at a single activity. The concept will be fully implemented by June 1987. Thus, the functional and responsibility boundaries will be completely changed. Already there has been a significant impact on the West Coast contracting organizations.

Thus far the Centers of Excellence in contracting has merely resulted in a decentralization of the procurement support previously provided by NRCC Long Beach and the NSC Oakland. It is also responsible for the centralized procurement support currently available at Mare Island Naval Shipyard. Prior to its implementation, Long Beach NRCC provided full procurement support to Long Beach Naval Shipyard. Since then the NRCC has changed its name to NRCC San Diego and has been relocated to NSC San Diego with a detachment remaining at Long Beach to service the shipyard and other tenant activities. It now is responsible for the procurement of material and services in excess of $25K (large purchases). The small purchase function of NRCC was separated and is now a part of NSC San Diego, but again a detachment remains at Long Beach.

In the case of procurement support provided at Long Beach Naval Shipyard, the procurement responsibility has become somewhat confusing compared with the previous arrangement. Where in the past NRCC provided complete procurement

support for the shipyard, it now only provides large purchase support while small purchase support is provided by a detachment of NSC San Diego. The organization is further fragmented in that a contingent of buyers are physically located at the shipyard away from the main NSC Detachment Office. The small detachment is physically located next to the Technical Division and in the same building with the planners and type desk people. They are responsible for the procurement of urgent requirements for the waterfront production support. This solves the proximity issue of having buyers near the technical and requisitioning personnel. For the shipyard this is an improvement over the previous organization in terms of waterfront support. However, in terms of contracting expertise being centrally located, this organization defeats the Centers of Excellence theory. Furthermore, where in the past, the shipyard could forward all procurement requests to a single activity and deal directly with that organization, it now must send its requirements to one of three different offices depending on the dollar value and application of the material.

The Centers of Excellence in contracting had a very favorable impact on Mare Island Naval Shipyard. A detachment of NRCC was co-located with the Mare Island purchasing office. Previously Mare Island's procurement authority for nonnuclear requirements was increased to $100K. So in the case of Mare Island, it has contracting authority for all its nuclear requirements and all nonnuclear requirements up to $100K. And since the NRCC is physically located in the same office, all requisitions for procurement can be forwarded to a single place. This makes for a more efficient process since all major requisition processing functions are located together.

There are current plans to implement the Centers of Excellence concept at Puget Sound and throughout the East Coast NFCS activities as well. However, implementation of the concept at these other activities is contingent on its success or failure at the West Coast activities where it has already been implemented.

D. MODEL INSTALLATION GRADUATE PROGRAM

The Model Installation Graduate Program (MIGP) was developed in the Department of the Navy in response to a recent DoD Directive regarding installation management. It is a key method used within the Navy to implement these policies:

- The Commanding Officer of an installation is responsible for accomplishing the mission assigned to the installation, and should be delegated broad authority to decide how best to accomplish the mission, and is accountable for all resources applied to the mission.

- Headquarters staff activities shall be directed toward facilitating any installation commander's ability to accomplish the mission. Regulations that limit installation commander's freedom to do their jobs are contrary to the basic DoD installation management policy, and shall be cancelled or revised.
- Except where required to preserve essential wartime support capability, or where constrained by law or federal regulation, installation commanders shall be free to purchase goods and services wherever they can get the combination of quality, responsiveness, and cost that best satisfies their requirements. [Ref. 17]

MIGP is an extension of the Model Installation Program (MIP) which is an ongoing test program involving only a limited number of Navy installations. MIP was designed to improve installations by encouraging innovative approaches to problem solving. MIGP is designed to continue the initiatives of MIP and apply its principles to all Navy shore installations. All shore commands are eligible to participate in the MIGP. The intent is to implement innovative ideas which will facilitate the installation commander's ability to accomplish the mission. Participation begins by submission of a MIGP initiative (MIPI) or waiver request. Initiatives are forwarded up the chain of command. Major claimants staff the initiative within appropriate Systems or other Support Commands, and forward staffed initiatives beyond their approval authority to the Chief of Naval Operations (CNO) for resolution. Major Claimants also determine whether the proposal should be tested at one of their Model Installations or at the command requesting the waiver. The waiver request can be used to remove any policy or regulation which stands in the way of implementing an innovative idea. Commands are encouraged to submit waiver requests from regulations which limit their ability to perform their jobs or their freedom to purchase goods and services wherever they can get the combination of quality, responsiveness, and cost that best satisfies their requirements.

COMNAVSUP has used the MIGP to request waivers to regulations. In fact several of the MIPI's forwarded by NAVSUP have been recommendations for improvement of shipyard procurement for which NAVSUP did not have the authority to approve. The general feeling of the Systems Command is that the MIGP is an expeditious method of processing the proposed changes [Ref. 18].

The following are selected examples of Model Installation Graduate Program Initiatives (MIPI) submitted by various field activities. Not all MIPI's affecting procurement support are presented. The following list of recommendations or requests for waivers potentially have the greatest impact on procurement support at naval shipyards:

1. Increase the Warner Amendment Exemption to $10 million: By invoking the Warner Amendment, activities exempt the acquisition of certain commercially available ADP equipment and services from the purview of the Brooks Act.
2. Decentralize procurement of metalworking machinery and equipment: Approval would allow field activities to procure these items directly from the vendor using normal contracting procedures instead of forwarding these requirements to the Naval Regional Contracting Center, Washington, D.C. for procurement action.
3. Increase the centralized commodity acquisition threshold to $25,000: This would allow the field activity direct procurement authority of items in support of technical projects rather than submitting the requirement to a Defense Logistics Agency (DLA) activity.
4. Increase the requirement for obtaining competition from $1,000 to $2,500: This would reduce the processing and award time for these actions.
5. Waive the mandatory sources of supply requirement: This would allow direct procurement for certain items currently centrally procured rather than submitting the requirement to the designated procuring activity.
6. Waive the standard stock material requirement: Allow activities to procure nonstandard material when it is considered indispensable in support of technical programs. This would eliminate the need to obtain approvals and certifications of unsuitability of standard stock items.
7. Increase the threshold authority for small purchase to $100,000: Activities would be able to procure hardware items and associated maintenance services which are solicited on a full and open competition basis as "brand name or equal" and/or utilize a commercial purchase description when the estimated price of the item is less than $100,000 using small purchase procedures.
8. Increase the threshold for synopsis requirement in small purchase actions to $25,000: This would increase the threshold for synopsis requirement in all small purchase actions from $10,000 to $25,000 and would reduce the PALT for these actions accordingly.
9. Grant local authority to lease vehicles in excess of 60 days: This would give field activities authority to lease vehicles for up to one year rather than submitting these requirements to the authorized contracting activity. [Ref. 19]

All naval shipyards are currently participating in the MIGP at this time. Further improvements in the Navy's procurement system can be expected from the submission of additional recommendations and initiatives. Also, the flexibility provided by the program, allows for an efficient system which can easily be implemented at any activity. By availing themselves of this procedure, the shipyards will be able to collectively improve the procurement process. insure fair competition among all naval shipyards.

E. DEFENSE CONTRACT SIMPLIFICATION WORKSHOP REPORT

As part of the Navy's continuing effort to streamline the acquisition process, NAVSUP sponsored the Department of Defense Contract Simplification Workshop in November 1986. The Workshop developed an extensive list of new and innovative ideas which was submitted to the Deputy Assistant Secretary of Defense for Procurement 15 January 1987.

The recommended simplification actions encompassed the entire acquisition spectrum and included such diverse actions as:

- Utilizing simplified procedures for construction efforts under $50,000
- Removing the requirement for representations and certifications for small purchase
- Deleting the requirement for acquisition plans for certain types of service contracts
- Establishing procedures for the close-out of completed fixed price contracts when no final invoice has been submitted and the outstanding amount is $1,000 or less
- Increasing the threshold requirement for a Certificate of Competency (COC) to $25,000 [Ref. 20: p. i]

The recommended simplification actions fall into three categories: (1) recommendations requiring Congressional approval, (2) regulatory change, or (3) service level implementation. The following are selected examples of recommendations requiring Congressional approval. The Workshop Report contains the complete listing of recommendations submitted to the Office of the Secretary of Defense (OSD). The recommendations presented here have a significant impact on the purchase procedures throughout the NFCS including naval shipyards. They are representative of the spectrum of new and innovative ideas developed and submitted to OSD.

- Change the Service Contract Act threshold for wage determinations from over $2,500 to over $25,000: This would significantly reduce the administrative effort involved in these actions since requests for wage determinations must be submitted to the Department of Labor (DOL) for each requirement in excess of $2,500 unless a current determination is on file for the particular service. Raising the threshold to over $25,000 would decrease procurement administrative lead time, reduce the burden on acquisition personnel in meeting workload output standards, and increase customer satisfaction through timely awards.
- Exempt small purchases from the requirement for obtaining Certificates of Competency (COC): Since the threshold for small business, small purchase set-asides has been increase from $10,000 to $25,000, all small purchases should be

exempt from the requirement to obtain COCs. The benefits derived by such action would be a reduction in procurement administrative lead time and additional administrative and resource costs incurred by the Small Business Administration.

- Establish different thresholds for submission of cost or pricing data based on contract types: The U.S. Code now requires a contractor or subcontractor to submit cost or pricing data with specified exceptions, prior to the award of any negotiated contract expected to exceed $100,000 regardless of contract-type, and to certify that such data is accurate, current, and complete. In a cost-type contract, the cost or pricing data received affects the cost base on which the fixed-fee is negotiated. Basing the threshold for submitting cost and pricing data on contract type will streamline this process. contracts).
- Modify the Justification and Approval (J&A) thresholds for other than full and open competition: The J&A process required by 10 USC (f) (1) has increased procurement administrative lead time and is inefficient because of the high approval levels required on routine acquisition decisions. Since the implementation of the Competition in Contracting Act (CICA), there has been a tremendous increase in competitive acquisitions. With the establishment of Competition Advocate positions and the competition reporting requirements, the mechanisms for ensuring continued progress are in place. Therefore, it would be appropriate to increase the J&A thresholds and approval levels. These levels should be commensurate with the effective competition infrastructure the DoD has already implemented.

Several other recommendations were made affecting other areas of contracting but have limited impact on the type of procurement on-going at naval shipyards. Also, other ideas were submitted which were either not accepted as not being within the scope of the workshop or a decision regarding acceptance was postponed until after additional information is obtained. The workshop was highly successful and indicates the concern and initiative within the Navy and DoD to improve and streamline the acquisition process. Future workshops of a similar nature are necessary to keep up with the changes in contracting regulations and their consequential impact on the procurement system. Successful workshops will help to perpetuate positive and beneficial initiatives for improvement.

F. LOGISTIC SUPPORT CENTERS

Material requisition or JML preparation for all overhaul requirements is normally a responsibility of the Planning Department at naval shipyards. The Planners and Estimaters are assigned this task. JML's are prepared and forwarded to the Supply Department for appropriate action.

In an effort to improve upon the existing material ordering system and minimize requisition problems, NSY Pearl Harbor implemented a new and innovative material ordering concept called Logistic Support Center (LSC). The LSC was established under the control of the Supply Officer to centrally manage advance material planning and ordering.

The LSC is designated as the shipyard's data base manager for the JML system. Its functions include obtaining and maintaining current material planning data, determining material requirements for authorized work, providing complete and accurate data for sourcing, requisitioning, for procurement action, and ordering material. The LSC is concerned with non-nuclear material requirements only. The following additional functions are assigned the LSC:

- Updating the automated JML system
- Determining and ordering advance (prior to availability start) material requirements for authorized work and "new" work for ships already in availability
- Make recommendations for "make" or"buy" decisions
- Ensuring the timely ordering of material in accordance with published plans and ordering schedules
- Researching and providing complete and accurate data for sourcing against locally available assets, requisitioning of standard stock material and nonstandard procurement actions
- Reviewing and resolving non-engineering type technical issues including cost on referrals from local purchase actions [Ref. 21]

The Logistic Support Center is composed of both supply and technical people. This provides an ordering organization with individuals having experience in and knowledgeable of mechanical ship systems and applications coupled with employees who fully understand and are knowledgeable of the Navy's Supply System. If this concept proves successful, other shipyards may establish Logistic Support Centers as well.

G. SUMMARY

Material requisitioning and ordering lead times play important roles in the lead time involved from material determination to material receipt. These lead times can be critical determinants in the successful overhauls at naval shipyards. This section is primarily concerned with the lead time over which the Contracting Officer has some control or can affect--PALT. Coopers & Lybrand have submitted a total of 45

recommendations to NAVSUP which are designed to simplify, streamline or otherwise enhance shipyard procurement support. Likewise, NAVSUP has accomplished several shipyard procurement improvement initiatives and forwarded others for waiver to ASN (S&L). Finally, many other recommendations or waivers to contracting rules and regulations which inhibit an organizations efficiency and productivity have been submitted to higher authority by means of the MIGP. The adoption of these recommendations and requests should have a favorable impact on the NFCS and improve the procurement support at naval shipyards.

IV. PROCUREMENT AUTOMATION

A. INTRODUCTION

1. General

Computers have become an essential part of organizational information processing because of the power of technology and the volume of data to be processed. The application of computers to information processing began in 1954 when one of the first computers was programmed to process payroll. Today, computerized processing of transaction data is a routine activity of large organizations. [Ref. 22: p. 4] Three major uses of computers are:

1. Corporate level centralized data base--used for planning, forecasting and monitoring component organization.
2. In-plant centralized or decentralized--used for inventory control, production scheduling, purchasing data bases, decision analysis.
3. In-plant mini-control computers--used for precise guidance and control of storage and processing equipment, and communications with other computers.

Purchasing is one of the last major business functions to be automated. For many purchasing departments, computer services were introduced for the first time in the seventies, whereas other activities such as production or accounting, were automated in the fifties and sixties. Automation enables reduced lead times, reduced paper work, increased accuracy. It results in more informed and improved management decisions and better utilization of resources.

The automation of purchasing can be highly rewarding and productive. In addition to automating the various purchasing tasks for the buyer, purchasing systems today also are Decision Support Systems (DSS) and greatly assist the purchasing manager in the decision making process.

A study of the automation of purchasing was conducted at Memphis State University. Of the more than two hundred business firms solicited, 174 responded to the survey. In response to the question: "To what degree do your purchasing decisions depend on output from the EDP system?" roughly 68% said that their decisions depended on the output to a moderate or great extent. Moreover, 86% of the purchasing agents already working with an automated procurement system said that "more extensive use of the computer would increase the quality of their work."

[Ref. 23: p. 22] A key factor in the success of computer systems for purchasing is the extent of involvement of the purchasing staff in the planning, and implementation of such services. Success is defined as the degree of satisfaction expressed by the purchasing staff.

The future trend in procurement automation is sophisticated modeling for future requirements, and cost/price forecasting. For example Purchasing may be faced with making recommendations to top management regarding anticipatory or forward buying. Purchasing's visibility of the market place and awareness of supply and demand conditions may suggest committing the firm to purchase materials that normally would not be contracted for so far out into the future in order to obtain more favorable prices or availability. A model could be developed which would enhance the quality of decision-making in these forward-buying situations. [Ref. 23: p. 23]

2. **Navy Initiatives**

The lack of adequate automation in the procurement field within the Navy is still a major issue with management and procurement personnel. Although several automation alternatives exist and some headway has been made over the years in automating this area, most personnel in the field are dissatisfied with the current state of affairs. Typical complaints include inferior quality and inadequate capability of the existing systems, and excessive paper work and time required to get approval and procure a computer system.

All of the Navy's shipyards utilize the Shipyard Management Information System/Material Management (SYMIS/MM) computer system for ordering and tracking material and performing associated accounting. Within this system is a sub-program called Purchase (PUR) which keeps track of locally procured material. This program is oriented more towards the overall logistical needs of the activity and as such was not specifically tailored to the needs of the procurement function. Accordingly, it lacks many of the mechanized capabilities offered by a fully automated procurement system and can not be considered an automated procurement system.

In August of 1983 the Secretary of Defense issued a 25 point memorandum which directed initiatives be taken to improve the DoD acquisition process. This was a continuation of his basic 10 point memorandum issued a month earlier on the same subject. In his second memorandum the Secretary of Defense called for "acceleration of plans for acquisition of computer hardware and software to assist parts control personnel."

Prior to the Secretary of Defense's memorandum, the Naval Supply Systems Command had experimented with an internally developed automated procurement system called Automated Procurement and Data Entry System (APADE) in the early 1970's. Unfortunately the system's operational capability was far less than had been anticipated. After several years of trying to correct this system without substantive success, research efforts were channeled to the design and development of a new program in 1983. This new system is a totally integrated and automated procurement program and like its predecessor is also called APADE (technically APADE 85). It was recently installed at four NFCS activities and will be installed at 32 others by 1991.

Meanwhile, in the absence of a Navy-wide automated procurement system, field activities bought or locally developed their own automated systems. Today there are various types of automation in use throughout the NFCS. In addition to the automated material system peculiar to Navy shipyards, a commercially developed program call the Automated Procurement and Tracking System (APTS) has gained some popularity with the shipyards and other NFCS activities.

Since additional automation was needed in order to streamline procurement procedures and keep up with management needs and the vast amount of reporting requirements, other systems have been implemented. Of the systems currently installed at the shipyards and other NFCS activities (asided from APADE), APTS appears to best satisfy the automation needs at field activities. This system was developed commercially and is a completely automated procurement system. Implementation of APTS at naval shipyards was recommended by the Coopers & Lybrand study. Its major drawback, however, is that it is a stand alone system and at this time is not completely integrated with the various other field activity systems. Accordingly, it is considered an interim system at those activities scheduled to receive APADE.

Finally, the Navy has also developed and is implementing another major automated system called Standard Automated Financial Systems (STAFS). This system was developed under the direction of the Navy Accounting and Finance Center, Washington, D.C. Like APADE, this system is completely integrated. While it's primary purpose is to update the financial management systems at NIF activities, it also has many of the same capabilities as APADE with respect to procurement processing.

The following discussion provides a brief description of each one of these computer systems (APADE, APTS, STAFS). It is not intended to view any one of

these systems as an automation alternative over another (system selection has already been made), but rather to merely provide insight to the capabilities of 3 different automated procurement systems currently available within the Navy. The reader should keep in mind that APTS is designed to automate a single local activity while APADE is an integrated system and will be linked to all other APADE cites throughout the NFCS. STAFS on the other hand, has been developed primarily to improve the financial reporting at NIF activities. The purchase sub-program within STAFS however, has many of the same capabilities as APADE. Figure 4.1 shows a comparison of some of the main features of these three systems. A detailed comparison of APADE and STAFS is provided in Appendix D.

Feature	*APTS*	*APADE*	*STAFS*
Fully integrated with other local systems	No	Yes	Yes
Linked to other activities' procurement system	No	Yes	No
User friendly	Yes	Yes	Yes
Degree of automation	Medium	High	High
Buyer Terminal access	Low	High	Medium
Cost	Low	High	High

Figure 4.1 Comparison of System Features.

B. AUTOMATED PROCUREMENT TRACKING SYSTEM (APTS)

APTS is a procurement application developed by Omega Computer Systems, Inc. for Naval Air Station Pt. Mugu, California in 1983. It is currently in operation at several other NFCS activities including NSY Portsmouth, NSC San Diego and NSC Charleston. NSY Norfolk and Philadelphia have also expressed a desire to install this system. The APTS software program is owned and maintained by the Navy and runs

on a Wang VS computer with access from remote terminal locations. It can be described as a stand alone non-integrated automated procurement system and as such is considered an interim system to APADE.

Although it is capable of automating both the large and small purchase processing procedures, the system is better adapted to providing support for small purchase actions. Consisting of programs and data files that store and manage procurement information, APTS tracks purchasing actions, generates internal and external reports, and provides for electronic preparation of procurement documents. Further, it has been designed to be in full compliance with existing procurement regulations and directives. [Ref. 24: p. 4]

Processing through APTS is conducted by menu driven interface with clerks, buyers, contract specialists, managers and possibly even customers. Requisition inputs can be accomplished by key stroke or through automated interfaces with either UADPS-SP or SYMIS/MM tapes. Through the manual key stroke data entry method, the input clerk or buyer provides single line requisition data from the customer. If entered by an input clerk, a supervisor may manually assign the purchase action to an individual buyer. APTS validates all input data and ensures required data are provided by alerting the operator to any mandatory entries that may be missing. The requisition data are entered to the data base, and a standard pre-award milestone tracking plan commences.

During the pre-award phase of the procurement process, APTS allows for requisition modification or cancellation, and can provide a Bidders Mailing List (BML) through the use of a word processing application incorporated in the program. Manual entries are required to update status and record actions pertaining to the requisition. The buyer must evaluate responses and make an award decision. Once the award decision is made, the APTS application can again be used to generate award documentation on Form DD 1155 for small purchase.

APTS will prepare and print required external reports and forms such as the DD 1057, Report of Monthly Small Purchase Actions, and the DD 1155, Purchase or Delivery Order. It also has the capability of generating numerous internal reports for local use.

Capabilities of APTS included the tracking of purchase functions through the entire procurement cycle from the receipt of a requisition through the point of completion (cancellation or award) and subsequent modifications. Inquiry files

containing historical and active records can also be accessed. They are displayed by requisition or contract number and can be accessed by internal and external activities having entry authorization. Enhanced features include a comprehensive FAR clause bank, on-line "Help" menus and instant reference documentation, and milestone planning for contract administration. Additional APTS capabilities include the following features:

- menu driven and user friendly
- generation of purchase documentation
- generation of external reports
- customer inquiry capability
- real time access to procurement status
- capability of modifying and updating actions/documents
- availability of BML for use in processing
- on-line instruction and reference documentation
- FAR clause bank accessible by contract types
- CBD synopsis template and available telecommunications interface.

Although several NFCS activities currently have this system installed and others are considering installation, APTS, as an alternative for purchase automation, is deficient in several areas compared to a totally integrated system like APADE. The system is very capable of processing small purchase requirements but is limited in its capability of processing contracts requirements. A comprehensive data base providing an adequate pricing history is lacking and receipt of material/services must be recorded manually. Moreover, it is a stand-alone non-integrated computer system.

The Navy has been maintaining APTS for the past two years, but its future is unclear. If it does have a future, it will most likely be relegated to automation of those smaller procurement activities not slated for the Navy's integrated procurement automation system. APTS is considered a temporary "fix" for activities who currently have the system but will eventually be outfitted with a more comprehensive automated system. [Ref. 25]

C. AUTOMATION OF PROCUREMENT AND ACCOUNTING DATA ENTRY (APADE)

1. Background

APADE has a long history. The original APADE system was a result of R&D work to design a totally integrated procurement system in the early 1970's. FMSO was

assigned the responsibility of the Central Design Agency (CDA) by NAVSUP. NSC Oakland was the designated pilot test site for the project to determine the feasibility of converting the existing manual purchasing process to an automated system utilizing a mini-computer. The system design provided for procurement clerks (typists) to prepare purchase solicitations and award documents on a display unit. It was menu driven and prompted the typist in order to complete the documents. The document would then be printed by the system and forwarded to the contractor. Unfortunately the early APADE system met with limited success and further implementation was halted.

The current APADE project (APADE 85) was started in 1984 and was an outgrowth of previous lessons learned from the original APADE project. The system is presently operational at Puget Sound, Charleston, Pearl Harbor, and Norfolk Naval Supply Centers. APADE will be in use at all NSC's and NRCC's by 1989 and will be installed at over 34 NFCS activities by 1991. [Ref. 26: p. 17]

During the decision phase to reconfigure APADE or develop and implement an alternate system, FMSO and NAVSUP studied the various automated systems already existing in the field for one that might be a likely candidate for a totally integrated NFCS automated procurement system. These studies included the following systems:

- PROMIS--NSC Charleston's Procurement Management Information System
- ASPIRE--NSC Puget Sound's Automated Status of Purchasing Information Recorded Electronically
- Wang System--NRCC Long Beach's Procurement System
- PADS--Department of the Army Readiness Command Procurement Automated Documentation System
- SAMMS--Defense Logistics Agency's Standard Automated Material Management System
- CIAPS--Air Force's Customer Integrated Automated Procurement System

Since total integration of all required functions and exportation to the various NFCS activities was not considered feasible with any of these systems, they were rejected as possible alternatives for automating the NFCS. The Navy planners then opted for new development and turned back to designing a comprehensive and integrated system. Although this new development is vastly different from the original APADE, the acronym was only slightly changed to APADE 85. But for the purposes of this discussion the acronym APADE will be used.

APADE is a state-of-the-art automated procurement and Decision Support System (DSS). The system comes complete with specially designed office furniture to accommodate the hardware and computer terminal for both managers and employees. Training and implementation is accomplished by a special team of experts who insure all users are capable of operating the system and are available for follow-up assistance. The system includes the following capabilities:

- On-line procurement tracking/document control
- Formal document preparation
- Source Data Automation (SDA) and Source Document Generation (SDG)
- Procurement management information reporting
- Real time interaction processing [Ref. 27: p. 2.6]

2. **Functional Characteristics**

The following is a brief overview of the functional areas of APADE:

- Requisition Input/Update Processing: Requisition input is accomplished either manually or automatically through interfaces with either UADPS-SP or the SYMIS/MM systems. Data entries are automatically edited for correct format and content. Requisitions can be grouped using specially tailored requisition input screens and purchase request data sheets can be printed. The capability also exists for the operator to make buyer code updates and initiate both full and partial cancellation actions.
- Referrals: the buyer can refer a customer requisition to another activity electronically from the Referral Issue input screen. This function also validates all requisition data for accuracy and completeness.
- Preaward Documentation: An interactive word processing capability is used to create a variety of documents for the preaward process. The Report of Contract Profit Plan (DD-1499), Contractor Pricing Proposal (SF-1403), Report of Letter Contract (NAVMAT 4330/270), etc. can be generated. This process automatically updates the data base, and keys those documents whose responses require tracking.
- Informal Solicitations: Requests for Quotation (RFQ) are initiated in this segment. An RFQ number is assigned and the user is prompted for the applicable information necessary to generate the RFQ. A list of sources to be solicited can be designated by the user or a BML can be provided by the system. If a firm is selected that does not meet set-aside requirements or has been debarred from government contracting, an error message will be generated.
- Presolicitation Notices: This process is similar to the informal solicitation process and is used to develop and identify interest among potential sources in a negotiated procurement action.
- Formal Solicitation: Solicitation numbers and opening/closing dates are assigned. An Abstract of Offers will be generated from contractors' data received in response to the solicitation.

- Amendments to Formal Solicitation: Input data updates records to reflect the existence and content of an amendment which are generated by the system's interactive word processing capability.
- Bidders Mailing List Updates: BML updating is required during the solicitation process for all firms that responded to the solicitation. Duplicate entries or debarred firms will result in an error message.
- Award Processing: This process provides processing capabilities for both large and small purchase. The system provides for the use of the following purchase instruments:
    1. Blanket Purchase Agreement (BPA) Calls
    2. Imprest Fund
    3. Unilateral and Bilateral Purchase Orders
    4. Delivery Orders
    5. Release of Automated Delivery Orders
    6. Large Purchase Awards.
    7. Negotiated Bilateral Contracts [Ref. 28: pp. 3.19-3.40]

The forecasted schedule of installation of APADE at the naval shipyards or NSC's/NRCC's supporting the shipyards is shown in Figure 4.2. [Ref. 29] The acronym in parentheses indicates that the main hardware for the system will be installed at that location and is not scheduled to be installed at that particular shipyard. While the computer hardware itself may not be physically located at a shipyard, the activity will still have access to APADE through remotely located computer terminals which will be tied in directly to the APADE system.

The following section describes a second integrated system currently being developed and implemented by the Navy. This system is similar to APADE with respect to the automation of the procurement function. The two systems are compared in detail in Appendix D.

D. STANDARD AUTOMATED FINANCIAL SYSTEM (STAFS)

1. Background

STAFS is a totally integrated computer system much like APADE. But unlike APADE, its primary purpose is the accounting of all financial transactions at the activity. As such, it incorporates nearly all of the capabilities of APADE and was developed with requirements of the Naval Industrial Facility (shipyards, NARFs, Research Centers/Labs, etc.) in mind. It is a financial information management system that performs accounting for the Navy Industrial Fund. [Ref. 30]

East Coast	
NSY Portsmouth	Aug '88
NSY Philadelphia	Feb '88
NSY Norfolk	Jul '88
NSY Charleston (NSC)	Implemented
West Coast	
NSY Puget (NSC)	Implemented
NSY Mare Island	Mar '88
NSY Long Beach (NRCC)	Apr '88
NSY Pearl Harbor (NSC)	Implemented

Figure 4.2 Forecasted APADE Implementation Dates.

The Supply subsystem of STAFS integrates and automates requisitions for supplies or services, inventory reorders and issues, and material shipments with the accounting requirements of a NIF activity. STAFS provides single source entry of financial and supply information and provides system checks to insure that procurement requirements, funding, and deliverables meet the parameters established under each procurement document. Validation and verification checks for allocation of funds; authorized review/approval officials; delivery verification receipts; applicable DAR/FAR payment clauses; document modifications or amendments; contract term and dollar ceilings; and completion of service certifications are all controlled in the system through these established checks.

Processes included in the system design provide document control and status, buyer workload and vendor information, automated document creation or facsimiles thereof; financial transaction records, and automated management reports to facilitate the monitoring of activities and performance throughout the procurement process. STAFS encompasses the entire procurement phase from pre-procurement processing to actual procurement and award of purchase orders/contracts to receipt of material.

2. **Functional Characteristics**

The following is a brief overview of the procurement functional area of STAFS:

- Vendor file: potential sources are identified for competitive bidding. A Vendor Master List is created from vendor information entered into the system. The file contains business and remittance addresses, commodity codes, FSCMs, Joint Consolidated List (JCL) information and supplemental information to execute the DD-350 and DD-1057 reporting processses.
- Buyer assignment: The supply review and approval portion of the program assigns the procurement path and the assignment and reassignment of buyers to requisitions for commercial procurements.
- Solicitations: The necessary data required for solicitation generation is entered by procurement personnel. The system program provides contract pre-award information, document status, amendments issued, and tracks related data to effect updates to the vendor file based on vendor responses to solicitations.
- Small Purchase: STAFS provides recording processes for the various methods and procedures involved in the procurement of small purchases. These methods include the following:
    1. Blanket Purchase Agreements
    2. Call Orders Against Blanket Purchase Agreements
    3. Delivery Orders Against Existing FSS Contracts
    4. Imprest Fund Orders
    5. Purchase Orders
    6. Buyer's Worksheet
    7. Purchase Order--Invoice (SF-44's)
- Large Purchases (contracts): This process is similar to small purchase processing except that most of the records are entered into the system after-the-fact. Orders issued under Indefinite Delivery Type Contracts (IDTC's) and Basic Ordering Agreements (BOA's) can be generated on-line.

Unique characteristics of the STAFS program allows referencing multiple requisitions to a contract document using the CLIN/SUBCLIN; validation of funding allocations against established dollar ceilings; and the ability to maintain DAR/FAR clauses by CLIN when applicable. The system also accommodates the placement of orders under IDTC's and BOA's; processing of acceptance/rejection of contractor orders, and modifications and cancellations thereto; the entry of discount terms; various contract payment types; the identification of DAR/FAR contract payment clauses affecting payment to vendors; and the application of surcharges, transportation and other

charges as applicable. In addition, the system provides processing of material and service receipts submitted against contracts; provides input of data for statistical reporting requirements; provides contract performance status through contract close out; and permits the user to query all the records entered on a given contract.

E. SUMMARY

The procurement function is typically one of the last areas of an organization to become automated. But automating the procurement area can be highly rewarding and productive. In the Navy, automation of this function did not begin until the late 1960's. Today there are several procurement automation systems available commercially or owned by the government. While some activities have stand alone systems such as APTS, the Navy is currently implementing two integrated computer systems. Both systems are designed to fully automate the procurement function and to track material requirements from requisition preparation through to receipt of material and payment of the vendor's invoice. They will replace the existing systems currently in use at the shipyards.

APADE and STAFS, both integrated computer systems, are ideally suited for mechanizing the purchase function. However, APADE was designed specifically for the procurement application with its attendant interfacing requirements while STAFS was primarily designed to improve the financial reporting at NIF activities. Accordingly, APADE has been recognized as the officially approved automated procurement system for major NFCS activities and NAVSUP has directed that installation of APADE at these activities be expedited. In addition to the obvious benefits of an integrated computer system, APADE also provides access to all other NFCS activities which have APADE installed. Eventually this will mean access to data bases totalling over $5 billion in annual purchases. Where APADE has already been integrated at the shipyard, it will be used for procurement automation rather than the purchase segment of STAFS. In any event both APADE and STAFS must be compatible since STAFS will be installed at all NIF activities. The procurement automation characteristics of these two systems are compared in Appendix D.

V. PERSONNEL PRODUCTIVITY METHODS

A. INTRODUCTION

An analysis of any organization would not be complete without an examination of its personnel policies. People are the most important asset of any organization and are part and parcel to its success or failure. They are the resource that bring to the organization the knowledge and expertise necessary to enable it to effectively function. Without this most valuable ingredient no amount of procedural changes, process streamlining, innovative management applications, work environment improvements, or technological advancements will benefit the organization.

The defense acquisition work force is comprised of civilian and military personnel with expertise in several disciplines. But this work force is undertrained, underpaid, and inexperienced in comparison to its industry counterparts. It is vitally important to enhance the quality of the defense acquisition work force by improving the training and motivation of current personnel. [Ref. 7: p. 66] Likewise the Assistant Secretary of Defense for Acquisition and Logistics (A&L) in 1985 called for a qualified, motivated, efficient and effective work force as the foundation of all defense acquisition improvement efforts. [Ref. 31: p. 6] Attracting and retaining the calibre of people necessary for a quality procurement support program should be at the forefront of the Navy's initiatives to improve procurement support. This was also a recommendation of the Packard Commission Report.

B. MOTIVATION AND PRODUCTIVITY THEORY

Productivity is the measure of how well an operations system functions. One measure of productivity is the ratio of goods or services produced (output) to the resources used in their production (input). Productivity is important to the manager of the procurement organization because it indicates the level of efficiency of the department or division. The most obvious way to increase output per buyer is by increasing productivity [Ref. 32: p. 214].

Many possible actions may be taken to improve productivity in an organization. For example:

- The introduction of management Decision Support Systems (DSS).

- Smoothing work flow to cut down on the number of employees needed at peak times.
- Providing computer facilities in user areas.
- Training
- Incentive programs based on increases in long-term productivity (Increased Motivation).

A study by Daniel Yankelovich and John Immerwahr for the Public Agenda Foundation discovered a lack of commitment of many Americans to their jobs. Interestingly, this lack of commitment was not attributed to the loss of the "old work ethic." Although the study found that the work ethic is alive and well, only 23 percent of the workers surveyed indicated that they are performing at their full capacity. And almost half reported that they do not put a great deal of effort into their jobs over and above what is required. Yankelovich and Immerwahr attribute much of this lack of effort on the job to management's failure to reward hard work and high performance. Yet, many managers concentrate on updating equipment instead of developing employees when searching for methods or alternatives to improve productivity. [Ref. 32: p. 217]

The overall personnel policies of the organization and the methods for rewarding individual employees are organizational actions that influence and motivate workers. Although personnel policies, such as wage scales and employee benefits, generally have little impact on individual performance, they do affect their desire to remain with or leave the organization and the organization's ability to attract new employees.

The reward system of the organization guides the actions that generally have the greatest impact on the motivation and performance of individual employees. Research shows that rewards in the form of monetary incentives can motivate people to increase productivity. The use of financial incentives to motivate performance has been a part of management theory for quite some time. For example Frederick W. Taylor, a pioneer in scientific management, wrote in 1911 that

> the best type of management in ordinary use...[is] the management of "initiative and incentive." [Ref. 32: p. 218]

Provided they are effectively administered, salary increases, bonuses, and promotions can be strong motivators of individual performance. The reward or compensation must, in the employee's mind:

- justify the extra effort the improved performance requires,

- it must be directly related to that improved performance so that it is clear why the reward has been given, and
- it must be seen as fair by others in the work group so that they will not feel resentful and retaliate by lowering their own performance levels. [Ref. 32: p. 427]

If productivity is to be improved through increased motivation, it is necessary to understand the factors that affect motivation. Expectancy theory provides a model of motivation that is extremely useful in understanding what needs to be changed to increase worker motivation. It deals with the theory that what a person anticipates is likely to occur as a result of his or her behavior. Based upon expectancy theory, worker motivation is determined by three perceptions or beliefs held by the worker:

1. Perception of how much effort is required to reach alternative levels of performance.
2. The perception that the alternative performance levels will be rewarded or punished.
3. The perceived value that individuals place on those rewards or punishments.

Individuals will be motivated to be highly productive if and only if they:

- Perceive their effort will result in high productivity,
- Perceive that high productivity rather than low productivity will be rewarded and not punished, and
- Value those rewards.

If any of these variables are low, motivation to be a high producer will be severely restricted. [Ref. 33: p. 3]

C. DEPARTMENT OF DEFENSE PERSONNEL POLICIES

1. Motivation Initiatives

DoD has long recognized that motivated employees are a major force in improving productivity and has applied behavioral science techniques within the department to increase motivation. The most widely employed technique is the "quality circle." There are some 1,300 quality circles currently in operation within DoD and are responsible for both tangible and intangible improvements in morale and productivity. Norfolk Naval Shipyard, for instance, has realized a return of $3.25 on every $1.00 invested in quality circles. One quality circle recommended a tool storage facility at the shipyard. This resulted in annual savings of more than $99,000. [Ref. 34: p. 8] [3]

[3]For an evaluation of American companies' experience with quality circles, see Robert Wood, Frank Hull, and Koya Azum, "Evaluating Quality Circles," *California Management Review*, 26, No. 1, pp. 37-52, Fall 1983.

Other efforts to motivate the DoD work force include experiments in the use of pay for performance. The performance-contingent pay system tested by the Navy gives back to employees part of the savings achieved when employee performance exceeds established standards. In one project involving shipyard data entry, the Navy was able to increase productivity by 25 percent, reduce its workload backlog, and stabilize its data entry work force. These experiments are indicative of DoD's ability to motivate its workers to be more productive by sharing productivity gains with them in the form of increased pay. [Ref. 34: p. 8]

2. **Personnel Retention**

Personnel policies are the key factor in determining the quality, retention or absenteeism of an organization's work force. A high turnover in personnel is disruptive to the operations of an organization and dilutes its effectiveness. This is a particularly applicable concern for the procurement activities responsible for shipyard procurement support where the majority of procurement is accomplished by the lower graded personnel (usually GS-4 to GS-6). By any standard the turnover for these employees, typically 15% to 30% annually, is high. In order to have an opportunity of improving the procurement process, this work force must be stabilized and attrition or personnel turnover must be significantly reduced.

DoD's personnel policies are somewhat constrained by public law and it is restricted to certain hiring policies, compensation and benefits. For example, the Office of Personnel Management (OPM) designates the contract specialist series (GS 1102) as an administrative rather than a professional series. This precludes the establishment of any business education requirement for contract specialists. [Ref. 7: p. 68] This puts the government at a disadvantage in terms of attracting and retaining quality personnel compared with the private sector. On the other hand over 51% of the work force in private industry holds a bachelor's degree and over 24% have advanced degrees. [Ref. 35: p. 119]

Civilians frequently cite the rigid pay grades and seniority-based promotion standards of the federal civil service as disincentives to continued employment. Higher pay and better opportunities in private industry lure the best college graduates and brightest trainees away from government. [Ref. 7: p. 67] Employees tend to gravitate to jobs with these types of qualities within the government as well. This can be witnessed at shipyards where trainees or even experienced buyers transfer to more lucrative positions outside of the contracting field which offer substantially greater pay differentials and promise greater promotion opportunities.

An alternative personnel management system permitting greater flexibility with respect to status, pay and qualifications of civilian employees is needed in order to improve the acquisition work force. A personnel system such as the Navy's China Lake personnel project offers promising potential for satisfying the staffing needs of an improved acquisition work force. A mix of pay, incentive, and advancement based on performance, are employed to foster a competitive and cohesive work force. The Packard Commission observed that the project's intended goals of increasing retention, improving supervisor-employee relationships and dramatically reducing management paper work were achieved. Accordingly, it recommended that the merits of the project be applied to a similar program for acquisition personnel. [Ref. 7: p. 68]

Unfortunately though, the recommendation for an across the board grade level increase was disapproved by the Administration. [Ref. 36] But even so, attention to the personnel management areas of training, productivity improvement, and incentive systems both general and as specifically geared towards improving contracting quality, will help in attracting and retaining personnel and enhance the quality of this vital work force.

D. TRAINING AND DEVELOPMENT

The process of training and development aims at increasing the ability of individuals and groups to contribute to organizational effectiveness. Training is designed to improve skills in the present job. Development programs are designed to educate employees beyond the requirements of their present position so that they will be prepared for promotion and able to take a broader view of their role in the organization. [Ref. 32: p.321] The need to train new or recently promoted employees is self-evident. Such employees need to learn new skills, and since their motivation is likely to be high, they can be acquainted relatively easily with the skills and behavior expected in their new position. On the other hand, training experienced employees to make their performance more effective can be problematic. The training needs of these employees are not always easy to determine, and when they are determined, the individuals involved may resent being asked to change their established ways of doing their jobs. [Ref. 32: p. 338]

Civilian contract specialists are required by DoD to complete an average of six-hundred hours of mandatory training. Five major facilities provide these acquisition training programs. But according to a 1984 report by the DoD Inspector,

approximately two-thirds of all DoD contract specialists have not completed this training. [Ref. 37] Three of the primary reasons for this shortcoming are

1. Funding: The lack of funds to send personnel to off-site training is a serious problem. While the course itself may not be exorbitantly expensive, the activity is required to pay for employee salary, per diem and travel while they attend these courses. This can be a significant expenditure for most activities and in particular when considering this cost for the training requirements for several employees.
2. Scheduling: Getting quotas for the limited positions available, is not a simple task. Typically schedules must be made far in advance of course convening dates. This becomes problematic due to employee attrition, erroneous workload projections and budgeting constraints. In many instances an activity may not even know the availability of funds for training until way into the beginning of the fiscal year. By this time it's usually too late to request billets for that fiscal year and quotas for prospective candidates can only be given stand-by status.
3. Workload: It becomes a matter of prioritizing an activity's needs when deciding who and when an employee will attend training. In an environment where the focus is on productivity and workloads are demanding, losing individuals for a week or longer becomes painful even though that same individual's productivity and quality of work may be better after completion of the course.

Training for the purchasing agents (GS 1105) is even more spurious. DoD merely calls for completion of the Defense Small Purchase course to satisfy mandatory training requirements. There are no other mandated courses; but even worse, most of the other courses which are provided by the training facilities are restricted to the 1102 series personnel. Also, in addition to the reasons cited above, activities are even more reluctant to send these individuals to non-mandatory training. This means that for the small purchase buyer, who, as previously discussed, processes the majority of the purchase requirements for the shipyards and whose tasks can be equally demanding as the contract specialists, typically receive no more than one 5 day purchasing course as formal training. The rest of these individuals' knowledge is obtained through on the job training (OJT) or any outside instruction, courses, or reading available on the employee's own time.

E. NAVY PERSONNEL INCENTIVE AWARD PROGRAM

The Navy's Incentive Award Program is designed to motivate employees to increase productivity and creativity by rewarding those whose adopted suggestions benefit the Government and whose job performance is substantially above normal job requirements and performance standards. The Navy has various award programs

designed to provide rewards to employees for certain acts, above normal performance, or other noteworthy contributions. These include such awards as Distinguished Civilian Service, Distinguished Public Service, Distinguished Achievement in Science, Navy Meritorious Civilian Service Award, Navy Civilian Service Award and awards for beneficial suggestions, inventions, special service, acts, and a host of others. All these awards are designed to provided incentives and foster improved productivity. The benefits of recognizing superior work are threefold:

1. Employees receive personal satisfaction and awards.
2. Supervisors gain the cooperation and respect of their subordinates, and are given due credit for the extent to which they have been successful in motivating their employees.
3. The activity conserves its resources through the determination and efforts of its employees to reduce waste, improve methods and job performance and substantially reduce costs.

Performance awards, the most common type of award, are based on the employee's most recent performance appraisal and are issued annually at the end of the evaluation period. Employees are given an overall rating of unsatisfactory, marginal, satisfactory, highly satisfactory, or outstanding. A performance rating in either of the top two levels of the applicable performance appraisal system --Merit Pay System (MPS)/Basic Performance Appraisal Program (BPAP) --may serve as justification for a performance award. Through this system employees may receive sustained superior performance awards, special act or service awards, Quality Step Increases (QSI), or performance management and recognition system performance awards. [Ref. 38]

F. PROCUREMENT PERSONNEL QUALITY INCENTIVES

In 1983 the Secretary of Defense issued a memorandum to the services which listed ten points for improving the contracting process in DoD. The first initiative listed is for activities to "offer incentives to increase competitive bidding and reward employees who vigorously pursue cost savings." In response to this directive the Navy promulgated several personnel initiatives to increase competition. These initiatives were established under the Navy's BOSS program for NAVSUP field activities:

- Incorporate competition/pricing goals into MPS/BPAP objectives.
- Review position descriptions and establish critical elements to motivate employees to reduce costs and increase competition
- Recognize employees for improved pricing
- Review NAVSUP's employee recognition program

NAVSUP's policy stresses that each activity is responsible for recognizing individuals who make an extra effort or use their specialized knowledge to promote competition and save a significant amount of money. Accordingly, all activities have incorporated goals into employees' MPS/BPAP objectives. Additionally, employees are being recognized for their efforts in cost avoidance, increased competition and money savings.

There are numerous examples where employees' actions have saved the Navy significant amounts of money. For example, a buyer at NSC Charleston received a sole source procurement request for valves. The sole source justification indicated that competition in the past had been unsuccessful and therefore procurement should be made from the indicated source. But the buyer challenged the justification statement and attempted to get competition. The buyer was able to compete the requirement which resulted in a savings of nearly $10,000.

But the shipyards tend to recognize employees annually for their achievements in cost avoidance and competition through the goals established in the individual employee's MPS/BPAP objectives. Accordingly, the individual employee is marked in one of the categories of unsatisfactory, marginal, satisfactory, highly satisfactory, or outstanding depending on the amount of competition achieved throughout the marking period relative to the established goal. Naturally an employee would need to get an overall outstanding performance appraisal in all critical areas in order to qualify for an award as described above. This award wouldn't necessarily reflect the employee's competition and cost savings achievements but instead the employees's overall performance.

It doesn't appear that the shipyards then are applying the award program with the same intent and spirit intended by DoD and NAVSUP. Of the 464 awards reported to NAVSUP for fiscal year 1986 given to employees for their efforts in saving significant amounts of money only five were submitted by a single naval shipyard--Mare Island. But none of these employees were procurement series (1102 1105) personnel. [Ref. 10]

G. PERFORMANCE CONTINGENT REWARD SYSTEM: A CASE STUDY

In 1983 the Navy Personnel Research and Development Center published a study aimed at improving the small purchase division productivity. The study was conducted using the Performance Contingent Reward System (PCRS) which is a method developed to increase the motivation and productivity of federal workers. It is an

attempt to apply the theoretical principles of expectancy theory to the practical problems of employee motivation toward improved productivity. The primary intent of the research effort was to change worker perceptions so that they would believe that high productivity would be likely to result in their receiving valued rewards.

Productivity standards were first developed by the research group. This involved determining how long it should take an employee to complete each unit of work. Care had to be taken to ensure that the standards were perceived as being fair and attainable by the employees. If an employee does not believe that the efforts required are not excessive, any rewards associated with performance above standard are likely to be ineffective. [Ref. 33: p. 6]

Because the PCRS is based on improved productivity through financial rewards, a financial incentive formula was developed. In this case the sharing rate, the percentage of hourly pay shared for performance above standard, was chosen to be approximatedly 30 percent of the average hourly salary rate. Therefore, employees could earn 30 percent of what they would normally earn for each hour they saved by their performance above standard. [Ref. 33: p. 14]

Actual productivity and cost data from two periods--a 17 week "base" period prior to PCRS implementation and a 17 week "trial" period 7 months after the program had been implemented--were compared. The results were impressive and support the expectancy theory and the belief that the reward system of the organization has a significant impact on the motivation and performance of employees. The major finding was that overall production efficiency in terms of requisitions per labor hour increase significantly--from 1.73 to 2.18 (26%). This was accomplished by raising the level of requisition production by 13.5 percent and reducing the total adjusted labor hours used by 9.6 percent. Overall process effectiveness also increased significantly. Overtime labor hours were reduced by 94 percent, workload backlog for the buyers was cut 51.7 percent, and procurement administrative lead time (PALT) in days dropped by 42.6 percent. In addition, the direction of change on all facets of level of production, productivity, and process effectiveness was highly desireable between the base and trial periods. [Ref. 33: p. 16]

The report concluded that on every measure of productivity and production effectiveness chosen, the trial period was superior to the base period. The results support the hypothesis that a PCRS can increase individual productivity among small purchase buyers with cost effectiveness and the approval of the work force. However,

the study also concluded that difficulties in implementing and maintaining the effectiveness of such programs must be carefully considered and require continued research and development. [Ref. 33: p. 18].

H. SUMMARY

People are the most important asset of an organization. The success or failure of an organization is contingent on personnel motivation and productivity. As such special attention must be given the area of personnel management in order to enhance worker productivity. In addition to updating equipment and facilities, managers should concentrate on developing employees when searching for methods or alternatives to improve productivity. Training of employees is paramount in developing employees. Also financial incentives have long been used by organizations as a means of enhancing employee quality. The DoD and Navy have many established incentive and reward programs in place to achieve this goal. These programs range from Beneficial Suggestions to civilian recognition and cash award programs for quality performance. A performance improvement study using the Performance Contingent Reward System (PCRS) was conducted for a shipyard purchasing office by the Navy Personnel Research and Development Center San Diego. The results of the study showed conclusive evidence that personnel productivity can be significantly improved through a properly managed incentive rewards program. Basic to the success of these programs is dedicated support and involvement by the organization's top management.

VI. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. SUMMARY

The objectives of this thesis were to analyze the procurement support system at the eight naval shipyards, to provide possible improvements to this system, and to recommend appropriate changes where necessary to further improve the shipyard procurement process and overall supply support to the shipyard mission. The primary question posed to achieve this objective was, "What are the principal characteristics of the procurement process at U.S. Naval shipyards and how might they be improved?" To further achieve the objective, the following additional questions were considered:

1. What characteristics of the procurement system lengthen the processing time?
2. What are the unique aspects of the naval shipyard environment that force unique demands on the procurement process?
3. What initiatives are being made to improve shipyard procurement support?
4. Are internal or external organizational changes needed?
5. Are regulatory changes needed and/or feasible?
6. Is the work force adequate in terms of numbers, experience, and training?
7. Can improvements in the procurement process be made with additional or improved ADPE?
8. Are personnel support systems adequate?

In order to answer these questions, the research effort involved a thorough literature search of pertinent information, on-site visits and interviews with key individuals involved in the procurement process for naval shipyards, and an informal survey of procurement personnel.

The procurement system has evolved from a relatively simple process with few rules and regulations prior to the World War II to a highly technical, complex, and seemingly over regulated process today. Beginning with Congress's stringent requirements for support of socioeconomic programs to mandated competition for all government requirements with very few exceptions, government procurement has become a lengthy and expensive mechanism for satisfying the DoD's material requirements. The CICA legislation passed by Congress in 1984, requires even greater compliance in seeking competition and has created an even more difficult and demanding procurement process. At the very least, this legislation has increased

procurement lead time by requiring a longer solicitation and bid phase. For naval shipyards whose mission success or failure can be gauged by the timeliness of overhaul or repair completion, longer procurement lead times can result in greater costs.

The tougher policies and regulations have created a real dilemma for the shipyards. In order to comply with the strict interpretation of the procurement regulations, more manpower is needed to research the market, technical data bases, and/or earlier requirements determination as well as the additional personnel needed to process the same number of procurement requirements. This has had a dramatic effect on the business at shipyards faced with challenges of reducing overhead and other shipyard costs and still remain competitive with commercial shipyards. Ironically, the intent of CICA was not to necessarily increase procurement lead time for the sake of increasing lead time, but instead to improve the procurement process by increasing the nations's competitive base thereby improving quality and reducing the cost of material.

Requisition processing at naval shipyards is, by itself, a cumbersome and lengthy process. Individual material requirements are generated and screened by several different functional groups. Thousands of requisitions are processed through the system monthly and it is nearly infeasible to manipulate each of these requirements smoothly and without a "glitch." An analysis of randomly selected documents processed throughout the system indicates that for the typical requirement, approximately 2 weeks elapse from the date of document preparation until it is received by the purchasing organization. Realizing that the processing times are lengthy and due to an urgent need for these requirements (whether valid or not), there is a tendency to assign high priorities to an excessive number of requisitions. In fact in a study for the Secretary of the Navy, the GAO noted that all eight naval shipyards exceeded the 50% guideline set by OPNAV for high priority requisitions. Although the system at the shipyards is somewhat geared to operating in a "crisis mode," it defeats efficiencies and effectiveness designed into a systematic, routine processing model. Moreover, "walk-thru" and high priority requirements further burden an already complex and highly regulated procurement process.

While procurement requirements for naval shipyards range from low dollar value, off-the-shelf, easily obtainable-type items to very expensive, complex, and technical material and services, the preponderance of requirements are satisfied using "simplified purchase" procedures. Because these procedures are used rather than large purchase or contract procedures, this does not necessarily indicate that the procurements are easy

or simple. Purchase of highly complex and technical requirements falling in the less than $25K category (small purchase) are equally demanding and as difficult to procure as those for over $25K. The primary difference is that additional regulations are applicable and a different procurement document is used for large purchases. Material for nuclear applications, critical ship systems, and R&D work entail lengthy specifications, rigorous testing requirements, and arduous and tedious purchase procedures. Procurement of this type of material, regardless of its cost, is highly labor intensive and time consuming.

Efforts to routinely and effectively satisfy the urgent procurement requirements of the shipyard and still comply with the myriad of ever increasing stringent acquisition regulations has become a monumental challenge for those involved in providing purchase support at these activities. However, there are currently several programs and initiatives aimed at relieving this pressure, streamlining the acquisition process, and improving shipyard procurement support.

This research effort determined that many of the recommendations of the Coopers & Lybrand study, the President's Commission on Defense Management, the Defense Contract Simplification Workshop Report, and individual recommendations forwarded to the Head of the Contracting Activity have enhanced the procurement support at U.S. Naval shipyards. Also APADE, the Navy's new version of the procurement automation system, will reduce much of the workload currently performed manually throughout the field contracting system and at shipyards and contribute to a more professional organization and enhance compliance with existing procurement regulations and rules. Finally, the study concludes that steps taken to improve worker productivity by utilizing incentive reward systems will provide further improvements to the overall professionalism and productivity of the purchase support at shipyards.

There are many other external factors that are part of the material ordering process on which management could focus its attention in order to further improve the procurement support function. These include the overall process of material requirements determination and requisitioning. Pearl Harbor is currently experimenting with a unique concept geared towards these very issues and if successful may export the methodology to other shipyards.

B. CONCLUSIONS

The following is an outline of the various methods available for improving procurement support for naval shipyards.

1. Coopers & Lybrand Recommendations: Coopers & Lybrand, a big eight accounting firm was commissioned to assess NIF activities. The procurement portion of this study has so far concluded with over 45 recommendations to improve shipyard purchase support. Many of their recommendations are merely a call for a change in processing procedures and can be implemented by the local activity while others require approval from the Systems Command, the Office of the Secretary of the Navy or Defense, or congressional action. Nevertheless, these recommendations have merit and if instituted can achieve their stated purpose. Examples of Coopers & Lybrand recommendations include:

   - Streamline the small purchase pre-award process.
   - Upgrade the communications equipment of the purchase organization.
   - Improve the Purchase Division's staffing.
   - Establish simplified procedures for the procurement of material carried in the system but not available within certain time frames.
   - Increase the threshold for mandatory sources.
   - Allow large business to bid for requirements estimated to cost $10K and less.
   - Standardize procurement authority for the shipyards.
   - Upgrade Purchasing Division's communication equipment.
   - Institute a workable workload prioritization and follow-up system.
   - Provide small purchase training using the "Small Purchase Decision Model" text developed by NSY Norfolk.

2. Naval Supply Systems Command Initiatives: NAVSUP has been working closely with Coopers & Lybrand by screening, approving or recommending approval of many of their recommendations. Additionally, NAVSUP has initiated a number of actions aimed at improving shipyard purchase support. These include such things as approving or increasing procurement authority at shipyards, conducting management reviews, and generating waivers to streamline the procurement process. Perhaps the most exciting change initiated by NAVSUP was the establishment of Centers of Excellence on the West Coast. This entailed downgrading NSC Oakland's procurement authority, transferring NRCC Long Beach's small purchase responsibility to NSC San Diego and establishing NRCC Long Beach (now NRCC San Diego) as the "Guru" for large purchases for central and southern portions of the West Coast. Also, a Centers of Excellence team (NRCC Det) was co-located at NSY Mare Island. This has had a very favorable impact on the procurement support at NSY Mare Island. Where in the past requirements exceeding a certain dollar threshold were forwarded to NSC Oakland for procurement action, now all requirements for the shipyard are forwarded to the same office and can be procured locally.

3. Model Installation Graduate Program: The Model Installation Graduate Program is an outgrowth of DoD's directive to provide base commanders with adequate authority and the flexibility to better accomplish their missions. It is a tool whereby activities submit (to higher authority) recommendations or waivers to existing rules or procedures which are seen as impediments in mission accomplishment. All shipyards are able to avail themselves of MIGP procedures and consequently recommendations have been submitted by several activities. Many of these requests for waivers or recommendations involve changes to the procurement process. Examples of these requests include:
   - Increase the centralized commodity acquisition threshold to $25K.
   - Allow procurement of non-standard paint for road striping.
   - Waiver of mandatory "sources" of supply requirement.
   - Waiver of the standard stock material requirement.
   - Increase the small purchase threshold to $100K.
   - Permit leasing of vehicles in excess of 60 days.
4. Defense Contract Simplification Workshop: The Workshop, sponsored by COMNAVSUP, developed an extensive list of new and innovative ideas for improving or streamlining the procurement process. While its goal was to recommend improvements for the entire DoD procurement system, several recommendations in fact are applicable for the procurements at naval shipyards and will improve that process as well. Several of these recommendations include:
   - Change the Service Contract Act threshold for wage determinations from $2,500 to over $25,000.
   - Exempt small purchase from the requirement for obtaining Certificates of Competency (COC).
   - Modify the Justification and Approval (J&A) threshold.
   - Remove fiscal year funding limitation for certain recurring services.
   - Grant the Procuring Contracting Officer (PCO) authority to make the final decision on Small Business responsibility determinations.
5. Procurement Automation: Over the years several attempts have been made to mechanize the procurement function. In the early 1970's APADE was implemented on a trial basis to achieve this goal. Unfortunately the system did not perform as anticipated and further implementation of the project was not attempted. Because of a real need for computerization, several NFCS activities went out on their own and locally developed or procured what automation they could get. Accordingly, several different systems exist throughout the NFCS. Meanwhile, further R&D was conducted with the APADE to develop a totally integrated system and automate the field procurement process. The new APADE has now been successfully installed at 7 NFCS activities and by 1991 over 35 activities will have this system. APADE is a giant step forward for

procurement automation. It mechanizes most of the rudimentary and labor intensive processes involved in procurement. The system accomplishes tasks which heretofore could not be done by the activity due to resource constraints or the sheer volume of work involved. Thus the system frees procurement personnel to perform more essential and "mind-related" tasks. The system satisfies two main goals of the procurement system: 1) it helps to streamline the process thereby making it more responsive and efficient, and 2) it assists procurement personnel to comply with the myriad of procurement rules, regulations, and procedures and especially, it enhances the task of obtaining competition and contracting for only fair and reasonable prices. By having access to all other APADE activities' files, procurement personnel will be able to ascertain where the item was last purchased, who the competitors were, and the price that was paid.

6. Management Support: Shipyard managers are not fully aware of acquisition regulations and the purchasing organization's requirements. There appears to be a real lack of knowledge of acquisition regulations, time requirements, and information neeeded to procure material and services for the shipyard by individuals outside the purchase organization. Far greater emphasis is given to expediting requirements through the procurement cycle than pre-planning requirements before they are needed. This further frustrates the procurement process making it even more complex and difficult to effectively manage.

7. Personnel Initiatives: Personnel are an organization's most important asset. But the acquisition work force is undertrained, underpaid, and inexperienced compared to its industry counterparts. Limited training is available for small purchase (GS-1105 series) personnel and due to the expense and work load is generally difficult to obtain for all employees. The procurement environment is a complex system and training must be a basic ingredient of the procurement profession. Generally, employees themselves, feel that they are undertrained and underpaid for their positions. Also, application of the performance appraisal system varies from activity to activity. Workers often feel the system is unfair. And finally, the Navy's reward or incentive programs are little utilized at shipyard activities. Here again, employees feel the reward system is unfair. Several studies have been undertaken to determine ways of motivating personnel and improving productivity. The Navy's Personnel Research and Development Command in San Diego studied the effects of PCRS at a shipyard purchasing office. The study revealed unequivocally that a PCRS if properly implemented and managed can improve the productivity of procurement personnel. Better use of these systems must be made in order to attract and retain the necessary professional work force needed to perform the procurement support function at naval shipyards.

C. RECOMMENDATIONS

The following recommendations are proposed to further improve the shipyard procurement process and overall supply support to the shipyard mission:

1. Aggressively pursue implementation of Coopers & Lybrand recommendations: While it is realized that some recommendations are not conducive to federal procurement organizations due to contrasting goals, most of them offer sound and needed change. The study was conducted by personnel from the management consultant side of a top rated accounting firm with a great deal of experience and knowledge of both commercial and government procurement organizations. The streamlining effects resulting from implementation of these recommendations will greatly reduce the effort involved in shipyard procurements making the system more effective and efficient. However, as pointed out in the report, the recommendations are a "package deal." That is, implementation of only one or a few of the recommendations will not achieve the desire results of significantly improving the procurement support at shipyards. It would be beneficial for the Naval Supply Systems Command to determine which of the recommendations can or should be implemented and discuss this alternative with Coopers & Lybrand. From this dialogue, a complete package of recommendations should be drafted for implementation at the naval shipyards. Finally, a POA&M should be prepared for all shipyards to follow in implementing the adopted recommendations. NAVSUP should closely monitor implementation at these activities. It should be noted that organizations as well as the procurement regulations are very dynamic and so our answers to today's problems may not necessarily satisfy tomorrow's requirements. Ergo, continual follow-ups, overviews of the system, future studies, and finessing of new problems will be necessary.

2. Continue NAVSUP improvement initiatives: The recent attention given to the improved shipyard procurement issue by NAVSUP has enhanced procurement support at Naval shipyards. Focusing effort in this area instills pride in the Supply and Contracting organizations and reassures the shipyard and Naval Sea Systems Command that the "system" is responsive and is concerned about procurement support problems and that every effort is being made to resolve them and assist the shipyards in their mission. As noted above, the dynamic characteristices of the procurement system necessarily dictate continued involvement and Systems Command support to ensure systemic problems do not develop. Likewise, the Systems Command generally has the wherewithal and authority to take appropriate measures necessary to effect needed changes. NAVSUP should become more involved from an assistance perspective while simultaneously allowing the field activities the requisite flexibility to control their functions. To this end, regular "assist" visits in addition to PMR's should be conducted whereby Systems Command attention is routinely focused on helping activities resolve "hard-to-solve" problems. Moreover, procedures should be established requiring communications among the shipyards to assist each other in locally resolving problems or developing and recommending solutions to problems for submission to higher authority.

3. Postpone further implementation of Centers of Excellence concept: While the reorganization of NRCC Long Beach and consequent co-location of an NRCC Detachment at NSY Mare Island was a major improvement for that shipyard

over the previous arrangement, the benefits for Long Beach Naval Shipyard are not quite as clear. In terms of procurement support for shipyards, the issue really is the question of centralization versus decentralization of procurement authority.

4. Aggressively use the Model Installation Graduate Program: The MIGP has proven to be an extremely useful and versatile tool in effecting changes. As such, activities should be encouraged to make use of the program. MIGP has the added beneficial affect of input coming from the field activities (deck plates effect) where problems are dealt with daily. Consequently, the input should be regarded as being critical to mission accomplishment and treated accordingly. In the case where waivers are not granted, the rationale for denial should be provided the originating activity. Further, alternatives should be provided to shipyards allowing them to "work around" an issue or problem which is systemic or otherwise unworkable.

5. Aggressively pursue approval of Defense Simplification Workshop recommendations: Many of these recommendations have a potentially significant impact on shipyard procurements and if adopted will improve the procurement process. Accordingly, approval of these recommendations made by a group comprised of some of DoD's most senior and knowledgeable contracting experts, should be aggressively pursued. Also, future DoD workshops should be conducted in order to deal with those issues which were presented at the initial workshop, but the panel was unable to complete. New recommendations for the improvement of procurement procedures can also be presented at continuing workshops.

6. Implement procurement automation support: This recommendation is almost an academic issue since the implementation schedule of APADE, a completely integrated automated procurement system, indicates that all shipyards will be automated by Summer 1988. However, because of the real need for automation at field activities, and the favorable impact it will have on the NFCS, it is important to emphasize the continued need for APADE support in terms of training, modifications, and improvements. As discussed in previous recommendations, the contracting system is generally in a state of change. Therefore, the CDA must be alert to changes in regulations, policies, and procedures to which the computer system must be adapted. Required program modifications or other types of support requirements such as training must be readily implemented or otherwise provided by the CDA.

7. Shipyard managers must become more knowledgeable and familiar with requisition regulations and the purchasing organization's requirements: Top management support is needed to ensure compliance with the various rules, regulations, and policies governing acquisitions. Equally important is for management to become more concerned and involved in pre-planning the shipyard's purchase needs. Management should aggressively implement systems which will effectively monitor and manage pre-planning requirements thereby obviating the necessity of routinely expediting materials and services for the shipyard.

8. Pursue personnel quality enhancement initiatives: Realizing that people are the most important asset of the procurement organization, motivational techniques must be effectively employed to influence workers and improve productivity. This includes the use of a consistent and fair personnel evaluation system, i.e., evaluations for procurement personnel should include similar standards and evaluation criteria. Moreover, the various incentive and reward programs which are designed to enhance worker productivity should be used timely and equitably. Application of the government's Performance Contingent Reward System should be considered as a model for influencing motivation. The system should be "user friendly," i.e., simplify the system by reducing paper work and administrative requirements. Further, the obstacles to obtaining and attending training must be minimized to ensure procurement personnel are routinely provided more professional training. Also, the Packard Commission noted that this work force is undertrained and underpaid in comparison to its industry counterpart. Procurement personnel must receive adequate pay commensurate with their responsibilities. Pay should be based on comparable private industry wages instead of the current federal general schedule wage system.

APPENDIX A
INDIVIDUALS CONTRIBUTING TO THE RESEARCH EFFORT

Banford, T., LCDR, SC, USN, Norfolk Naval Shipyard, Norfolk, VA

Bowers, J., Deputy Director of Contracts (acting), Code 200, Charleston Naval Supply Center, Charleston, SC

Camacho, M., Supervisor, Purchasing Agent, Mare Island Naval Shipyard, Vallejo, CA

Cook, V., Purchasing Agent, Portsmouth Naval Shipyard, Portsmouth, NH

Cooper, M., Purchasing Agent, Mare Island Naval Shipyard, Vallejo, CA

Flores, A., Director Purchase Division, Pearl Harbor Naval Shipyard, Pearl Harbor, HI

Flud, A., Purchasing Agent, Charleston Naval Supply Center, Charleston, SC

Gillen, D., Director Purchase Division, Mare Island Naval Shipyard, Vallejo, CA

Gonzalas, R., LT, SC, USN, Naval Shipyard Philadelphia, Philadelphia, Pa

Guyer, D., CDR, SC, USN, APADE Project Officer, Naval Supply Systems Command, Washington, D.C.

Mackenson, W., Code 02, Naval Supply Systems Command, Washington, D.C.

Malone, J., CDR, SC, USN, Naval Weapons Center, China Lake, CA

Maloney, N., Contract Specialist, Mare Island Naval Shipyard, VAllejo, CA

McElderry, S., Purchasing Agent, Mare Island Naval Shipyard, Vallejo, CA

Palm, H., LCDR, SC, USN, Portsmouth Naval Shipyard, Portsmouth, NH

Platt, B., Supervisory Purchasing Agent, Mare Island Naval Shipyard, Vallejo, CA

Powell, D., Contract Specialist, Mare Island Naval Shipyard, Vallejo, CA

Rodrigues, L., LT, SC, USN Material Officer, Long Beach Naval Shipyard, Long Beach, CA

Steber, D., Supply Systems Manager, U. S. Navy Standard Automated Financial System Project Office, San Diego, CA

Swofford, K., Supervisory Purchase Agent, Mare Island Naval Shipyard, Vallejo, CA

West, P., CDR, SC, USN, Control Officer, Long Beach Naval Shipyard, Long Beach, CA

APPENDIX B
PURCHASE SUPPORT QUESTIONNAIRES

Part I: [Purchase Management Questionnaire]

1. If your activity is not a shipyard what percentage of your business is shipyard?
2. How many of your personnel are committed to purchase support of the shipyard?
3. What is the purchase authority of your activity?
4. Do you desire unlimited or your own purchase authority?
5. Over what dollar value do you pass your requirements to another activity? Which activity?
6. What is the size of your purchase staff?
7. Do you find it difficult to find/hire/retain qualified procurement personnel? Which levels?
8. Generally, what is the source of your entry level personnel ?
9. How would you rate the quality of your procurement staff?
10. Do you offer/provide employee incentives for above average or outstanding work performance or achievements? Describe your reward system in addition to the basic award program for the entire activity.
11. What is your personnel turnover in the various job series over the past 12 months? What do you feel is the primary cause?
12. What training is available/provided (formal and OJT)?
13. What is the approximate number of purchase documents processed monthly at your activity?
14. What was your PALT over the last 12 months?
15. What has been your backlog in documents over the past 12 months? What do you feel causes backlogs?
16. Do you feel that you are given the tools, resources, and management discretion necessary to perform your job?
17. What are your major problems (e.g., rules/regulations, personnel, budget, poorly written purchase requests, technical support, etc.)
18. Is your purchasing function mechanized (see ADPE questionnaire)?

Part II: [Purchasing Personnel Questionnaire]

1. What is your purchase authority?
2. What is your educational background?
3. How long have you been employed in a purchasing series position?
4. What formal training have you had for your job?
5. Do you receive sufficient on-the-job-training? How often?
6. Do you feel that you possess the educational background and experience needed to perform your job?
7. Usually, about how many requisitions (or documents) do you process weekly?
8. Do you experience back logs in your job? What are they caused by? What action is taken to reduce backlogs? How often?
9. Are you given adequate guidance to perform you job (desk guides, SOP's, FAR, DFAR, SUPARS, etc.)?
10. Are you kept apprised of the amount of the small purchase backlog and what action is necessary to keep it within established limits?
11. Do you feel that the rules and regulations you are expected to follow are well defined and reasonable?
12. Do you feel that the direction provided by local policies is consistent with current Navy policy?
13. Do you feel that the supervisory personnel have sufficient skills and time to manage your workload in a proper manner?
14. Overall, do you feel that the goals you've been given are well defined and realistic?
15. Do you feel that you have sufficient time to perform your job?
16. What are the major impediments to your performance (e.g. requisition completeness/lack of information, technical assistance, knowledge, sources, supervisors, workload, contracting regulations/rules, interruptions)?
17. If you use a computer system to perform your job, is it adequate or helpful? What are some of the problems with the system?
18. Are the facilities (i.e., space, equipment, etc.) adequate for you to do your job?
19. Do you feel that performance evaluations are fair and adequately judge your abilities to do the job?
20. Do you feel that you are sufficiently compensated for the work that you perform or do you feel that the compensation system is inadequate?

21. Do you feel that you are sufficiently rewarded for your accomplishments (are you appreciated)?

22. What do you feel is the potential for your advancement?

23. Do you have a career plan that you are following?

24. Is this field your career field or do you intend to make it your career?

25. What do you feel is the primary reason for turnover among your co-workers (e.g., morale, compensation, job pressure, etc.)?

Part III: [ADPE Evaluation Questionnaire]

Please rate the following characteristics of your ADPE poor, fair, good, or excellent:

1. Reduced procurement document preparation time_____

2. Enhanced tracking of procurement requests_____

3. Automatic preparation and printing of reports (satisfies management requirements for internal and external reporting)_____

4. Provides customer purchase inquiry capability_____

5. Improved contract administration and payment_____

6. Adequate training is provided_____

7. The system is user-friendly_____

8. Availability of various files such as price history and bidder mailing list_____

9. Adequate equipment is provided (buyers have use of a dedicated terminal)_____

10. Real time access to data_____

11. Improved PALT_____

APPENDIX C
ABBREVIATIONS AND ACRONYMS

ADPE	Automatic Data Processing Equipment
APADE	Automation of Procurement and Accounting Data Entry System
APTS	Automated Procurement Tracking System
ASPA	Armed Services Procurement Act of 1947
ASPR	Armed Services Procurement Regulations
BML	Bidders Mailing List
BOA	Blanket Ordering Agreement
BOSS	Buy Our Spares Smart
BPA	Blanket Purchase Agreement
BPAP	Basic Performance Appraisal Program
CAAC	Civilian Agency Acquisition Council
CBD	Commerce Business Daily
CDA	Central Design Agency
CICA	Competition in Contracting Act of 1984
CLIN	Contract Line Item Number
COC	Certificate of Competency
DAR	Defense Acquisition Regulations
DARC	Defense Acquisition Review Council
DLA	Defense Logistics Agency
DMI	Direct Material Inventory
DMN	Direct Material Nuclear
DSS	Decision Support System
EDP	Electronic Data Processing
FAD	Force Activity Designator
FAR	Federal Acquisition Regulations
FMSO	Fleet Material Support Office
FSCM	Manufacturers Federal Supply Code
GAO	United States General Accounting Office
HCA	Head of the Contracting Activity
IDTC	Indefinite Delivery Type Contract
JCL	Joint Consolidated List

J&A	Justification and Approval
LSC	Logistic Support Center
MIGP	Model Installation Graduate Program
MINS	Mare Island Naval Shipyard
MIS	Management Information System
MM	Material Management
MPS	Merit Pay System
NARF	Naval Air Rework Facility
NASA	National Aeronautics and Space Administration
NFCS	Navy Field Contracting System
NIF	Naval Industry Fund
NSC	Naval Supply Center
NSD	Naval Supply Depot
NSN	National Stock Number
NSY	Navy Shipyard
OFPP	Office of Federal Procurement Policy
OJT	On the Job Training
OMB	Office of Management and Budget
OPM	Office of Personnel Management
OSD	Office of Secretary of Defense
PALT	Procurement Administrative Lead Time
PCRS	Performance Contingent Reward System
PMR	Procurement Management Review
POA&M	Plan of Action and Milestones
PUR	Material Management Purchase program
RFQ	Request for Quotation
R&D	Research and Development
SDA	Source Data Automation
SDG	Source Document Generation
SPRINT	Spare Parts Review Initiatives, Army
SRA	Ship's Restricted Availability
SRF	Ship Repair Facility
STAFS	Standard Automated Financial System
SYMIS/MM	Shipyard Management Information/Material Management System
TLRN	Technical Logistics Referencing Network

UADPS-SP	Uniform Automated Data Processing System (Stock Points)
ZOP	Zero Overpricing Program, Air Force

APPENDIX D
STAFS/APADE COMPARABILITY MATRIX

FUNCTION	STAFS	APADE
Requisition Processes		
• Automated requisition creation	On-line	Non-APADE
• Requisition review/approval	On-line	Off-line
• Requisition on-line suspension	On-line	Off-line
• Requisition forms:		
1. DD 1149	On-line	On-line
2. DD 1348	On-line	On-line
3. DD 1348-6	On-line	On-line
4. NAVCOMPT Form 2276 (I/O)	on-line (I/O)	on-line (I)
5. NAVCOMPT Form 2275	On-line (I/O)	On-line (I)
• Requisition facsimile	On-line	Non-APADE
• Procurement path assignment	On-line	Off-line
• Single line requisition	On-line	On-line
• Multiple line requisition	Enhancement	On-line
• Automated reqn consolidations	Enhancement	On-line
• Requisition splits	Enhancement	On-line
• Standard item description file	Enhancement	On-line
• Purchase request (PR)	On-line	On-line (PR)
• PR/BOM facsimile	On-line	On-line
• Requisition status query	On-line	On-line
• Requisition interfaces:		
1. UADPS (I/O)	On-line (I/O)	On-line (I/O)
2. SYMIS-MM	Non-STAFS	On-line (I/O)
3. Local activity unique	On-line	Non-APADE
• Automated reqn to IDTC order	Non-STAFS	On-line
• Assign/reassign buyer	On-line	On-line
• Buyers worksheet	On-line	Off-line

• Automated buyers workload rpt	On-line	On-line
• UIC address file/labels	On-line	On-line
• Multiple site address list	Enhancement	On-line

Vendor Files

• Automated Vendor file	On-line	On-line
• Delete vendor file	On-line	On-line
• Vendor performance record	On-line	Non-APADE
• Vendor award distribution	On-line	On-line
• Query Vendor File	On-line	On-line
• Query Vendor Award Documents	On-line	On-line
• Vendor Award Notification Ltrs	Non-STAFS	On-line
• Vendor Response Abstract (SF1409)	Enhancement	On-line
• Bidders Mailing List	On-line	On-line
• Vendor Mailing Labels	On-line	On-line
• Vendor List by Commodity Code	On-line	On-line

Pre-award Documentation

• Acquisition/Milestone Plan	Enhancement	On-line
• Solicitation Record	On-line	On-line
• Solicitation Document	Non-STAFS	On-line
• Solicitation, Terms, Certs	Non-STAFS	On-line
• Amendment Record	On-line	On-line
• Clauses by Ref/Full Text	Enhancement	On-line
• Presolicitation Notice	Non-STAFS	On-line
• CBD Synopsis	Non-STAFS	On-line

Award Documents

Small Purchase

• BPA's	On-line	On-line
• BPA Calls	On-line	On-line
• FSS Orders	On-line	On-line

• Purchase Orders (Unilateral/Bilateral)	On-line	On-line
• Imprest Funds	On-line	On-line
• SF-44s	On-line	On-line
• Print DD-1155(batch/demand)	On-line	On-line
• Print 1155r	On-line	On-line
• Print DD-1057	On-line	On-line
• Print DD-350	On-line	On-line
• Print SF-36-Continuation Sheet	On-line	On-line
• Print SF-30	Enhancement	On-line
• Modify Sm. Purch. Documents	On-line	On-line
• Change Sm. Purch. Documents		
• Cancel Sm. Purch. Documents	On-line	On-line
• Query Sm. Purch. Documents	On-line	On-line
• Receipt, Invoice, Delivery Processing	On-line	Non-APADE Ticket

Large Purchase Awards

• Solicitation Record	On-line	On-line
• "C" Contracts Record	On-line	On-line
• "D" Contracts Master Record	On-line	On-line
• "D" Orders	On-line	On-line
• BOA Master Record	On-line	On-line
• BOA Order Record	On-line	On-line
• Print SF-26	Non-STAFS	On-line
• Print SF-36	On-line	On-line
• DD-350	On-line	On-line
• SF-99 Contract Award Notice	Non-STAFS	On-line
• Contract Admin. Letter	Non-STAFS	On-line
• Contract Admin. Plan	Non-STAFS	On-line
• CHINFO News Release	Non-STAFS	On-line
• Award Synopsis	Non-STAFS	On-line
• Print SF-30	Enhancement	On-line
• Print DD 1155	On-line	On-line
• Delivery Tracking	On-line	On-line

• Contract Close out	On-line	On-line
• Produce DD-1594	Enhancement	On-line
• Produce DD-1597	Enhancement	On-line
• Modify Large Purch. Records	On-line	On-line
• Change Large Purch. Records	On-line	On-line
• Cancel Large Purch. Records	On-line	On-line
• Query Large Purch. Records	On-line	On-line
• Print Delivery Facsimile	On-line	Non-APADE
• Process Invoices/Receipts	On-line	Non-APADE
• Print DD-1149	On-line	Non-APADE

MANAGEMENT/FINANCIAL REPORTS

External

• DD-1057	On-line	On-line
• Letter Contract Status	Non-STAFS	On-line
• Undefinitized Change Orders and Unpriced Orders	Non-STAFS	On-line
• Monthly Procurement Backlog	On-line	On-line

Internal

• Pending Delivery	On-line	On-line
• Eligible Contract Close outs	Enhancements	On-line
• BPA Usage Report	On-line	On-line
• Work in Process	On-line	On-line
• UMMIPS Priority WIP	Non-STAFS	On-line
• Contract History/Payment Rpt	Enhancement	Non-APADE
• Vendor Performance Rpt	On-line	On-line
• Material In Transit Rpt	On-line	Non-APADE
• Procurement Milestone Rpt	Non-STAFS	On-line
• Unpriced Orders Rpt	On-line	On-line

LIST OF REFERENCES

1. Palm, H., Purchase Division Officer, Portsmouth Naval Shipyard, interview, 2 Apr 1987.

2. Guedry, V. A., "The Pentagon Cracks Down on Spares." *Military Logistics Forum*, Jan/Feb 1985.

3. Competition Advocate of the Navy Memorandum of February 1987, "Competition Communique' 1-87."

4. Stoufer, D., Captain, USN, speech at Navy Postgraduate School, 4 Nov 1986.

5. Dobler, D. W., Lee, L., and Burt, D. N., *Purchasing and Materials Management*, 4th ed., McGraw-Hill Book Co., 1984.

6. Sherman, S. N., *Government Procurement Management*, 2nd ed., Woodcrafters Publication, 1985.

7. *A Quest For Excellence, The Presidents's Blue Ribbon Commission of Defense Management*, Jun 1986.

8. U.S., Department of the Navy, *Naval Shipyards Procedures for Issuance of Changes to Job Material List (JML) Screening and the Standard JML Document*, Mare Island Naval Shipyard P&E Instruction 4490.1, 1 Apr 1986.

9. Commander, Mare Island Naval Shipyard letter 5230 Ser 502/286 dated 18 Sept 1986.

10. Naval Supply Systems Command, Washington, D. C., *Buy Our Spares Smart Annual Report FY 86*, App. B.

11. West, P., CDR, SC, USN, Control Officer, Long Beach Naval Shipyard, interview, 27 Feb 1987.

12. Coopers & Lybrand, *Naval Shipyard Improved Procurement Effectiveness Program*, Product 1.2.7.6, manual, Feb 1987.

13. U.S., Department of the Navy, Naval Supply Systems Command, *Survey of Contract Statistics, NAVSUP Publication 561*, Washington, D.C., Fiscal Year 1986.

14. U.S., General Accounting Office, Report to the Secretary of the Navy, *Intermediate Inventories Can Be Reduced*, GAO/NSIAD-87-19, Oct 1986.

15. Coopers & Lybrand, Management Analysis of the Navy Industrial Fund, Shipyard Review Report, June 1986.

16. Commander Naval Supply Systems Command letter dated 29 Sep 1986 (personal letter from RADM E. K. Walker to RADM R. B. Horne, Deputy Commander for Industrial and Facility Management, Naval Sea Systems Command, Washington, D.C.).

17. U.S., Department of Defense, *Installation Management*, DoD Directive 4001.1 dated 4 Sep 1986.

18. Commander Naval Supply Systems Command memorandum for the Assistant Secretary of the Navy (S&L), ser. 5223/600330, 0212A/PKH, dated 20 Oct 1986.

19. Naval Weapons Center China Lake, CA memorandum 5200 ser 02A2/459 dated 9 Dec 1986.

20. U.S., Defense Simplification Workshop Report, 15 Jan 1987.

21. U.S., Department of the Navy, *Logistic Support Centers (LSC) Implementation*, Pearl Harbor Naval Shipyard Notice 4400, 16 Oct 1985.

22. Davis, G. B. and Olsen, M. H., *Management Information Systems*, 2nd ed., McGraw-Hill Book Co., 1985.

23. Elliott, Clifford, *Purchasing Attitudes Toward EDP*, Journal of Purchasing and Materials Management, Volume 12, Number 2, Summer, 1976.

24. Omega Computer Systems, Inc., *Automated Procurement Tracking System*, Ventura, CA, 10 Sep 1984.

25. Hipp, J., Contracting Department Deputy Director, Code 200A, Charleston Naval Supply Center, interview, 12 May 1987.

26. Kelly, Daniel C., CDR, SC. USN, *APADE or How I learned to Love Rather than Fear "3V" Status*. The Navy Supply Corps Newsletter, Jan/Feb 1987.

27. U.S., Department of the Navy, Naval Supply Systems Command, *Control Desk/Terminal Operators Manual APADE II, May 1987.*

28. U.S., Department of the Navy, Fleet Material Support Office, *Automation of Procurement and Accounting Data Entry System, Functional Description*, Mechanicsburg, PA, 21 Jun 1985.

29. Guyer, D., CDR, SC, USN, APADE Project Officer, Naval Supply Systems Command, Washington, D.C., interview, 11 May 1987.

30. U.S., Department of the Navy, Navy Accounting and Finance Center Washington, D.C., Navy Industrial Fund Standard Automated Financial System, December 1986

31. Assistant Secretary of Defense for Acquisition and Logistics (A&L), *DoD Acquisition Improvement--The Challenges Ahead, Perspectives of the Assistant Secretary of Defense for Acquisition and Logistics: White Paper No. 2--Revitalization of the DoD Acquisition and Logistics Work force*, 5 Nov 1985.

32. Stoner, James A. F., and Wankel C., *Management*, 3rd ed., Prentice-Hall, Inc., 1986.

33. Nebeker, D. M., Neuberger, B. M., and Hutton, V. N., *Productivity Improvement in a Purchase Division; Evaluation of a Performance Contingent Reward System (PCRS)*, Navy Personnel Research and Development Center San Diego, CA, research report, Sep 1983.

34. Korb, Lawrence J., *Civilians in Defense--the resource and the challenge*, Defense Management Journal, 3rd quarter, 1983.

35. U.S., General Accounting Office, *Defense Acquisition Work Force, GAO/NSIAD-86-45.*

36. Mackenson, W., Naval Supply Systems Command, SUP 02, interview, 13 Feb 1987.

37. Office of the Inspector General, DoD, *Report on the Audit of Department of Defense Procurement Training*, No. 84-047, 14 Feb 1984.

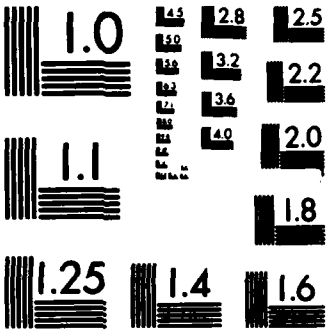
38. U.S., Department of the Navy, *Incentive Awards*, Navy Postgraduate School Instruction 12451.1B, 18 Aug 1986.

INITIAL DISTRIBUTION LIST

		No. Copies
1.	Defense Technical Information Center Cameron Station Alexandria, VA 22304-6145	2
2.	Library, Code 0142 Naval Postgraduate School Monterey, CA 93943-5002	2
3.	Department Chairman, Code 54 Department of Administrative Sciences Naval Postgraduate School Monterey, CA 93943-5000	1
4.	Professor David V. Lamm, Code 54Lt Department of Administrative Sciences Naval Postgraduate School Monterey, CA 93943-5000	5
5.	Professor Joseph G. San Miguel, Code 54Sm Department of Administrative Sciences Naval Postgraduate School Monterey, CA 93943-5000	1
6.	LCDR Raymond W. Smith, 54Sx Department of Administrative Sciences Naval Postgraduate School Monterey, CA 93943-5000	1
7.	Defense Logistics Studies Exchange U.S. Army Logistics Management Center Fort Lee, VA 23801	1
8.	Commander Naval Supply Systems Command (SUP 02) Washington, D.C. 20376	1
9.	CDR D. C. Guyer, SC, USN Naval Supply Systems Command (SUP 0473) Washington, D.C. 20376	1

AD-A184 664 INVESTIGATION OF INITIATIVES TO IMPROVE PROCUREMENT SUPPORT AT US NAVAL SHIPYARDS(U) NAVAL POSTGRADUATE SCHOOL MONTEREY CA C D MCDONALD JUN 87 2/2

UNCLASSIFIED F/G 15/5 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

10. LCDR C. D. McDonald, SC, USN — 3
17545 Holiday Drive
Morgan Hill, CA 95037

11. Mare Island Naval Shipyard — 1
Code 500
Vallejo, CA 94592

END

10-87

DTIC